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Machine Shop for Gas Producer Work

Features of the New Plant of the Smith
Gas Engineering Co., Dayton, Ohio—
Producer Operation for Power Purposes

The new plant of the Smith Gas Engineering Co. is at Moraine City, a suburb of Dayton, Ohio. Formerly at Lexington, Ohio, the establishment is so allied with Dayton interests that the removal adds materially to the manufacturing and laboratory advantages available by co-operation in this locality. Some six and a half acres are in the site of the shop buildings and here a very well lighted and in every way architecturally impressive main structure has been erected.

The lathe department, Fig. 2, illustrates the group drive adopted for machines of this size, and also shows the method of supporting the counter-shafts and the main line shafting with least interference of the traverse of the crane hook and its load. The counters are held in place by structural steel brackets rigidly gripping the wall. The main line of shafting is also firmly kept in accurate

alignment by the members extending through the side wall and a projection on every concrete column maintains the line firmly in position as to height. It will be seen in Fig. 2 that the electric motor is borne in place in the same way as the counters, and at this elevation is out of the way of dust and dirt, and is moreover not so liable to accident from the movement of materials about the shop floor.

Fig. 3 is another machine shop vista, evidencing the freedom given to floor operations by the planning of the tool locations. Here it is also to be noted that the plant managers, alive to the foot weariness due to standing or stepping for long periods on concrete foundation blocks, have provided mats for all operators of the machinery.

In Fig. 4 and in several succeeding illustrations are seen jib cranes capable of quick removal

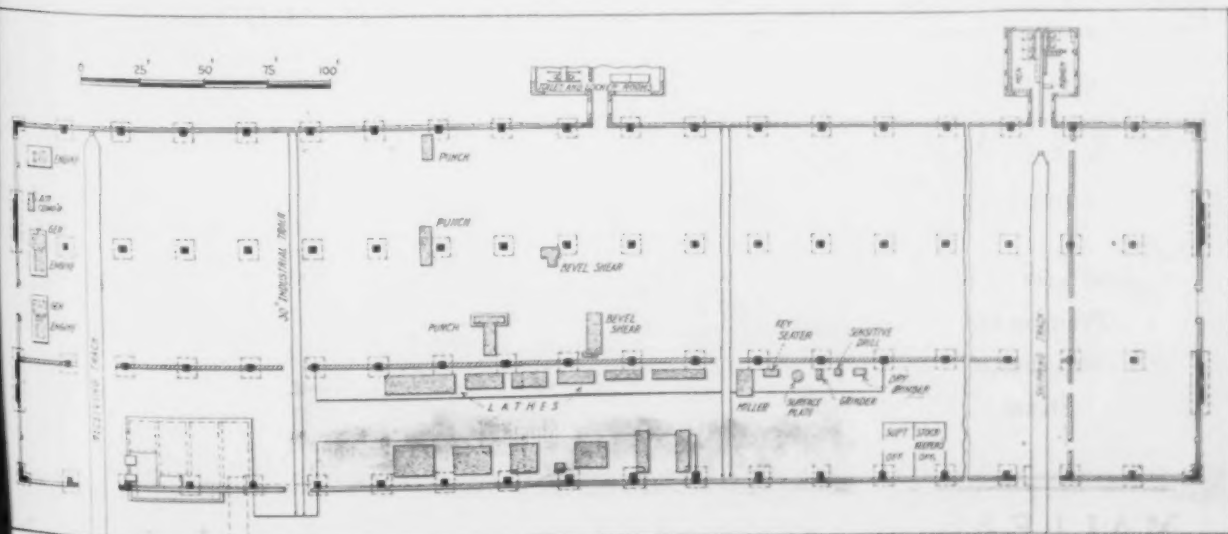


Fig. 1—Layout of Machinery
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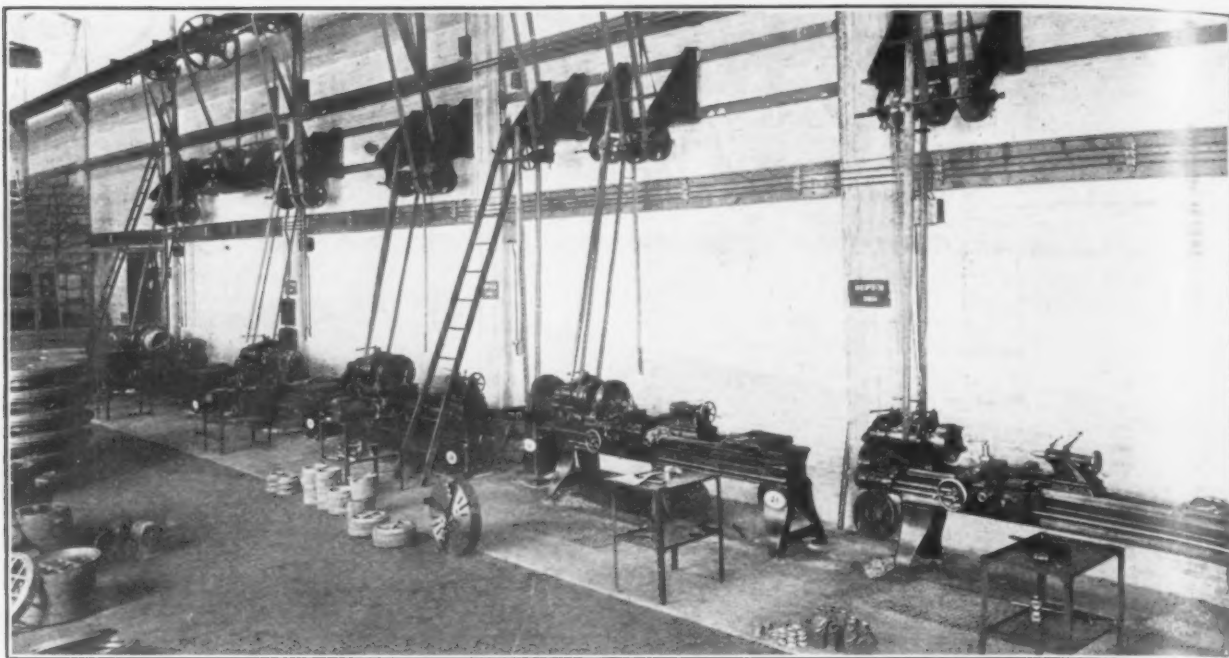


Fig. 2—Lathe Department. Shows the group drive employed for small machine tools and also illustrates the method of securing counter and main line shafting to walls of building

from one post or column to another about the plant. An eye bolt is attached permanently over the center of gravity of every jib horizontal member and on catching the point of the hook into this "hold-fast" the overhead electric traveling crane can easily and instantly put the jib at any other more convenient assignment.

In every 26-ft. bay there is a 5-ton Shepard electric traveling crane, 25 ft. under the hook, on runways extending the full length of the building; the cranes being capable of increasing their lifting speeds in proportion as they are operated on weights below their full load.

A further function of the columns, as in Figs. 5, 6 and 7, is to provide in every case connections for air pressure service and for an electric outlet. A workman may "plug in" an electric drill or

other appliance operated by this sort of energy or he can "hitch on" a pneumatic riveter or chipping tool at pleasure.

Methods of storing stock are shown in Fig. 8.

Fig. 9 is a view in the hospital department. This is really a first aid proposition, though complete in every essential for caring for the victim of an accident. There is a neighboring hospital of considerable size and the equipment of the Smith Gas Engineering Co.'s plant is expected only to furnish the preliminary treatment of serious cases or the complete care of slight and temporary ones. For these uses the department is ample.

Figs. 10, 11 and 12 illustrate the power plant facilities of which details are given in the same connection. Naturally the Smith Gas Engineering Co. is a user of producer gas for power purposes.



Fig. 3—Looking West Through the Machine Shop in the South Bay of the Plant. Note the wood block pavement down the center of the bay, the concrete foundation for the machine tools, and the matting provided for the operators of machinery

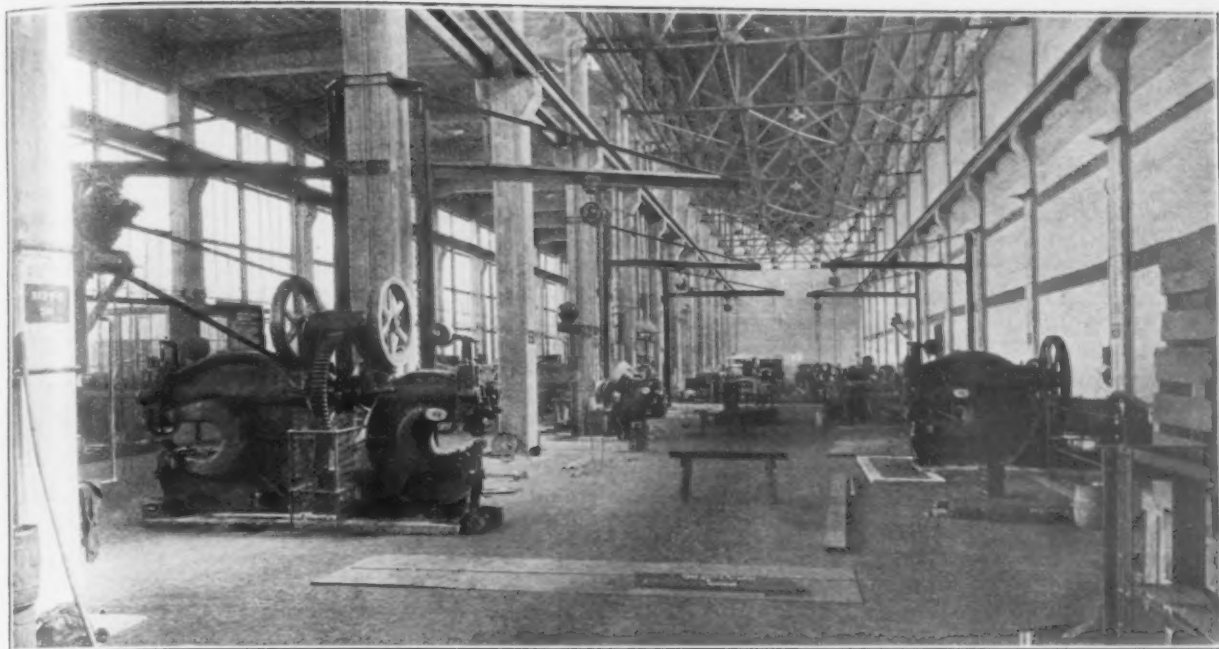


Fig. 12—Looking East Through Center Bay of Plant, Showing the Plate Department. Simple but very substantial and neat means of suspending jib cranes are provided at nearly every column as is well shown in this view

A typical installation is presented in Fig. 13 of a six-section Smith gas producer capable of gasifying two tons of coal per hour. At the extreme upper left hand corner of Fig. 12 the coal bunker is delivering the supply of fuel to a distributing device placed immediately below it, whence the coal passes into the gas generator. Thence the gas goes by way of a downcomer to a cooler and so on to the pump seen at the extreme right of the illustration. Forced through a tar extractor the gas next enters a secondary cooler, Fig. 13. A row of tar extractors is in the center and resting on the platform. Below the platform or working floor and also near the center of the illustration is seen the end of the cylindrical shell which acts as a tar receiver.

The design of the generator is unique in that the heavy elements such as the shell and the lining

are stationary, freeing the operating mechanism from severe strains. The sections of the generator are identical and are in number according to the capacity of a producer unit, each section carrying its own grate.

Grates and clinker bars operate through compressed air cylinders, whereby the fuel bed is kept uniform. Coal is charged without admission of air, the stokers being driven by a variable speed electric motor and each capable of independent starting or stopping by engagement or disengagement of its driving pawl. Coal is delivered from overhead bunkers directly into a distributing device which is under control of the operator and so arranged as to deliver coal to any desired portion of the fuel bed.

Gas leaving the generator goes through a downcomer to a primary cooler of static type



Fig. 13—Center Bay with Pipe Department. Illustrates the liberal use of jib cranes, and—at the right—the apparatus for welding is also shown

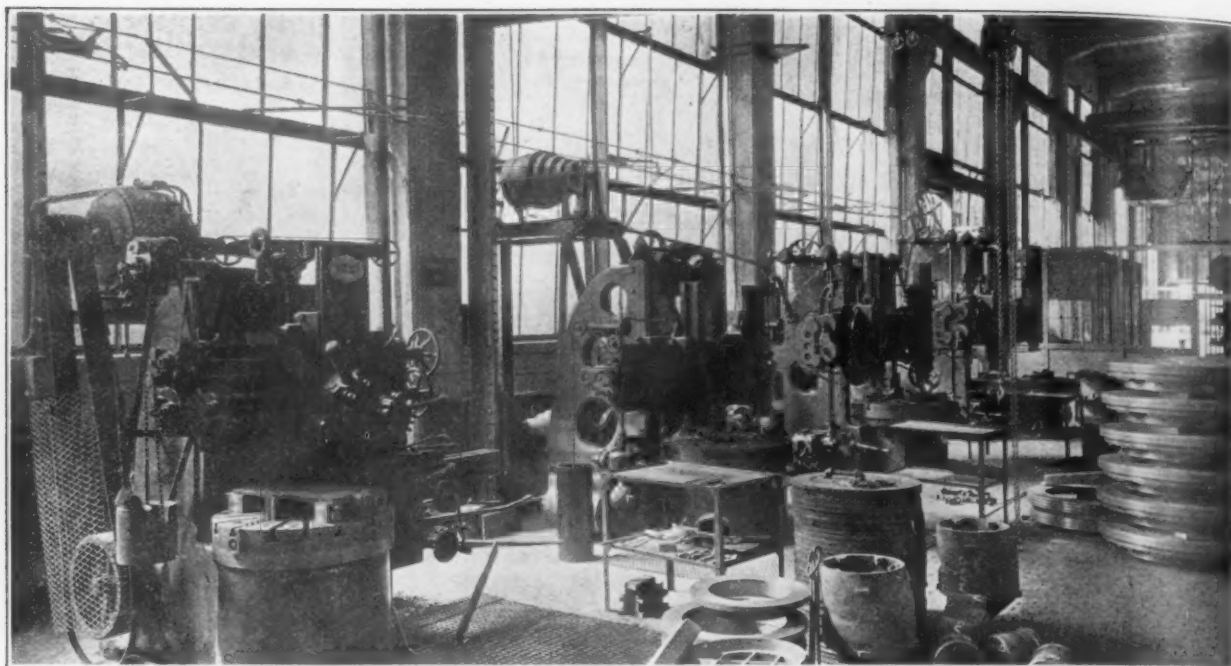


Fig. 6—The Boring Mill Department. Note the mounting of the readily removable jib cranes

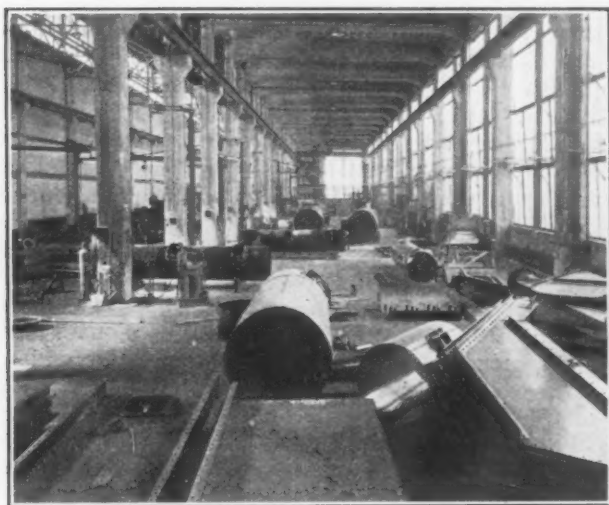


Fig. 7—North Bay, Showing Tank Department. Note the provision at every column for air pressure service and for electric outlets

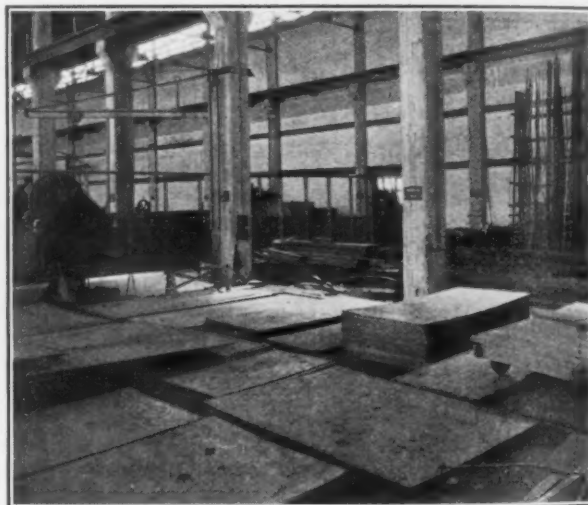


Fig. 8—Department for the Handling of Raw Steel Stock and Its Storage



Fig. 9—Interior of the Hospital Department

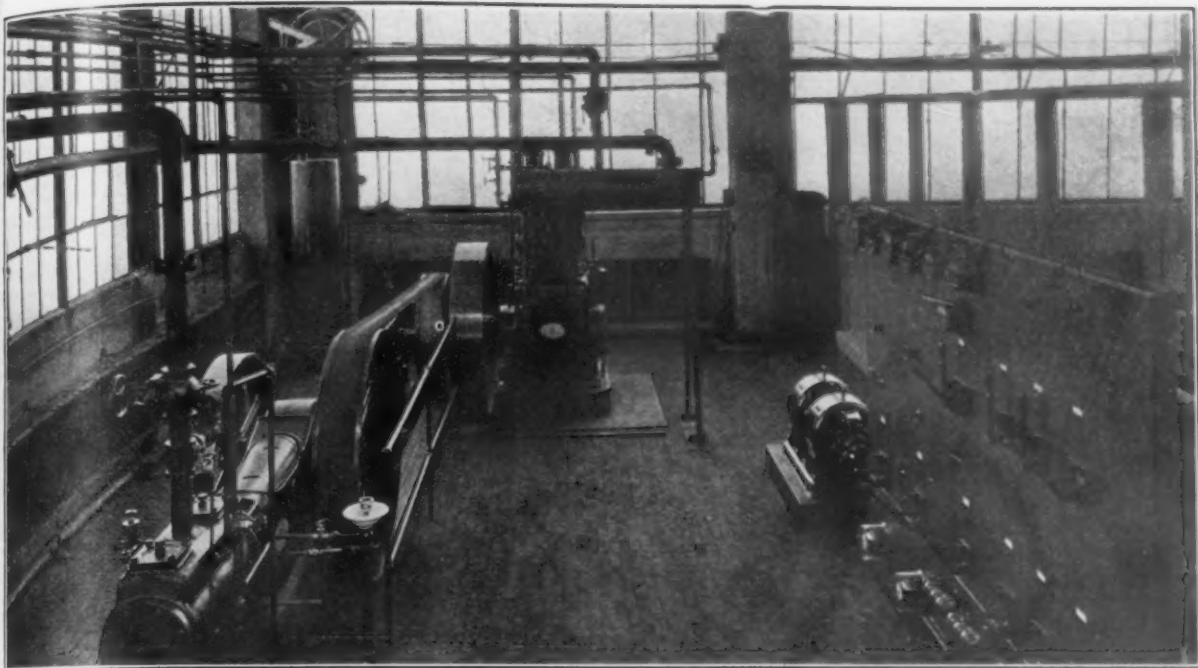


Fig. 10—North End of the Engine Room. Contains a 10 in. by 16 in. Ingersoll-Rand air compressor, a 9¼ in. by 16 in. 2-cylinder Rathbun gas engine, a 5-kw. balancing set, and a 5-panel switchboard built by the Frank Adam Electric Co.

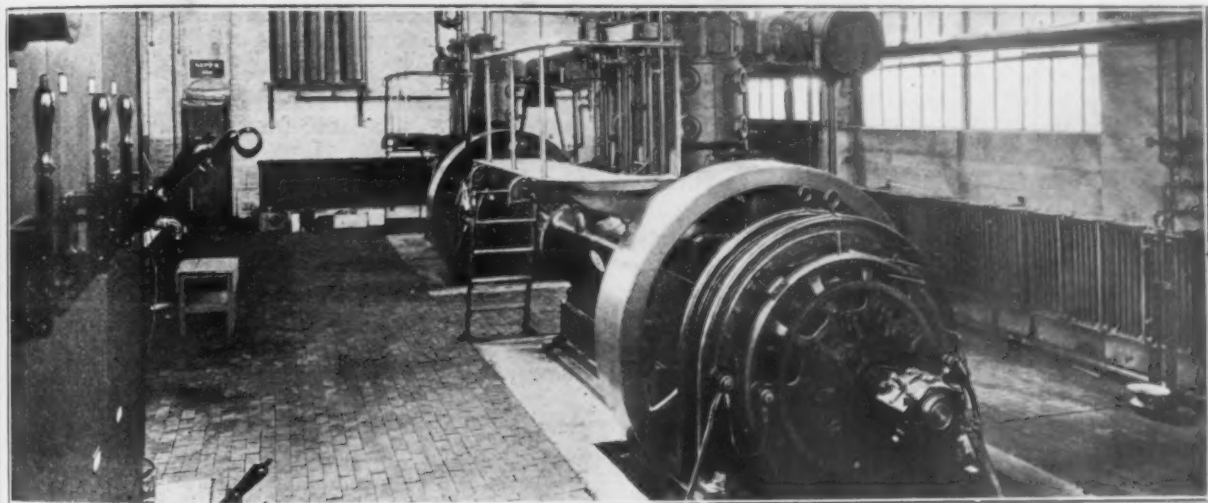


Fig. 11—Power Plant at West End of Building. Spanned by an electric crane and has the following equipment: Two 12¼ in. by 15 in. 3-cylinder Rathbun producer gas engines rated at 115 hp. each and direct connected to a couple of 75-kw. Crocker-Wheeler, 220-volt, d. c. generators

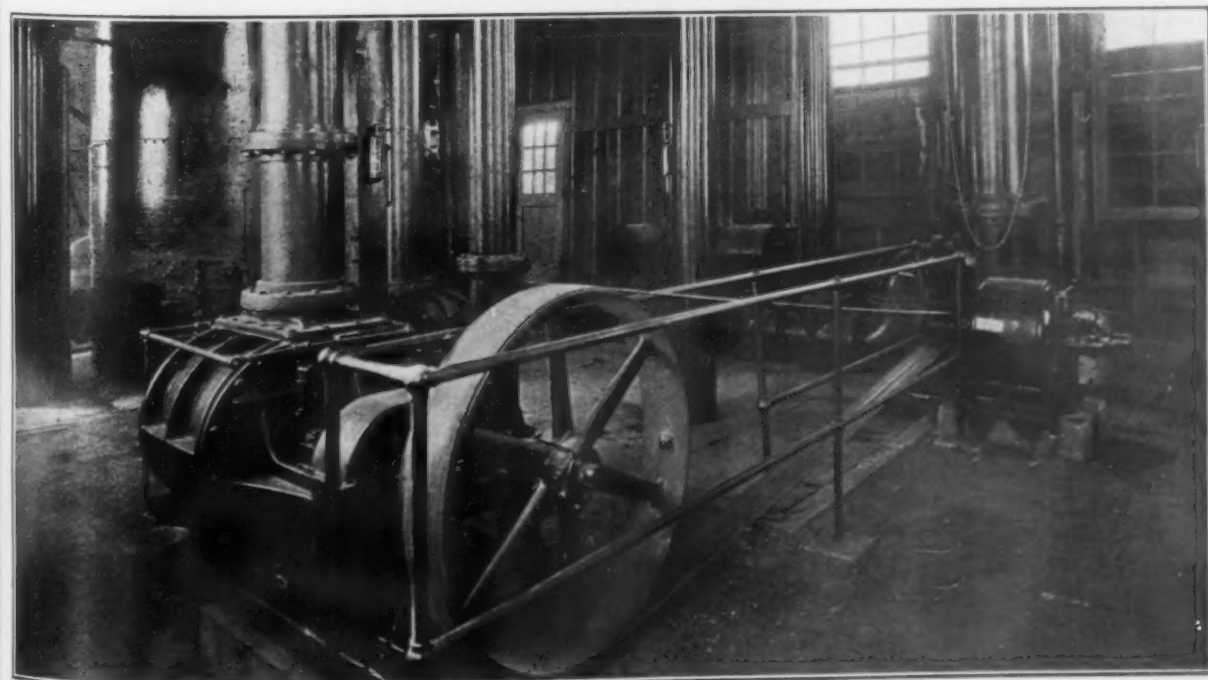


Fig. 12—Producer Gas Building of the Plant. Contains a 300-hp. type "B. F." Smith producer for the use of bituminous coal

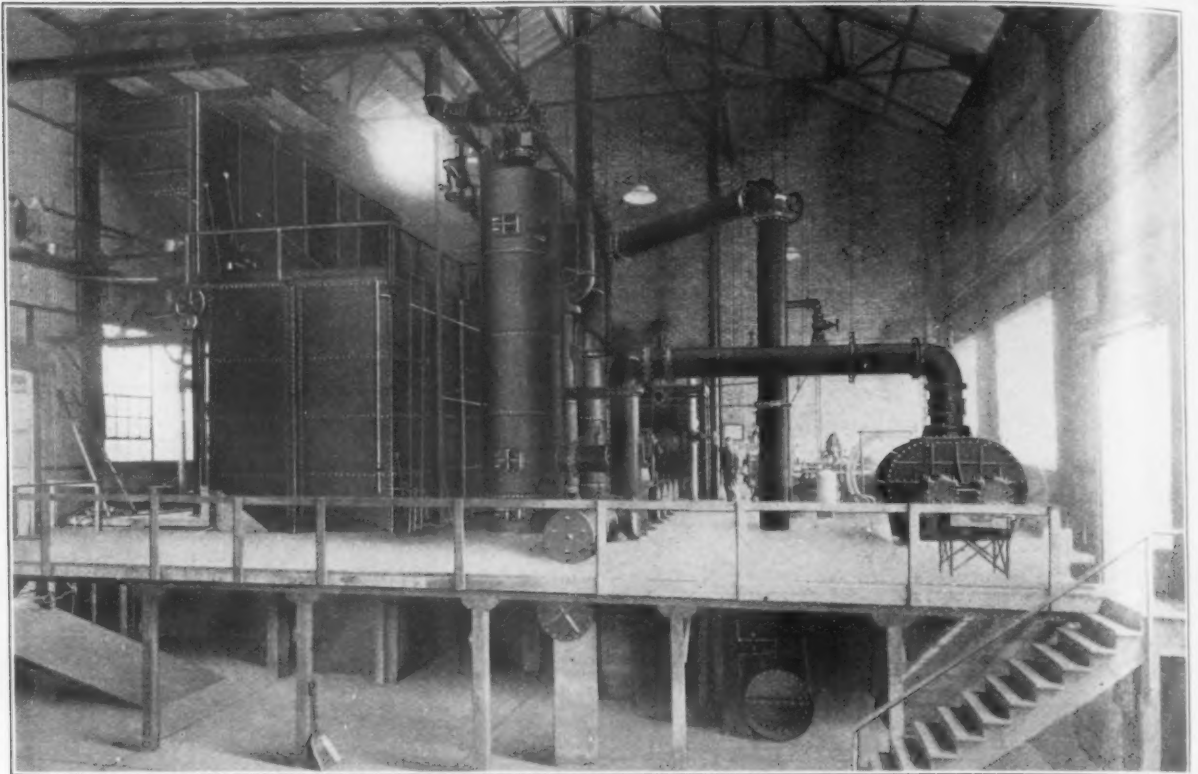


Fig. 13—A 6-section Smith Gas Producer. Capacity 2 tons of coal per hour, installed at plant of the Jeffrey Mfg. Co., Columbus, Ohio

where the temperature of the gas is reduced most suitably for the efficient operation of the tar extractor. From this point the gas passes through a low-pressure main to the inlet of a gas pump working under a maximum pressure of 5 lb. per square inch, sufficient to be in excess of the differential pressure of the tar extractor plus the pressure required on the distributing system. No holder or gas storage chamber is necessary, as the power for operating the pump is furnished by a direct-connected steam engine controlled by a special variable-speed governor automatically adjusting the speed of the pump to meet the demand for gas.

The tar-laden gas in passing through the extractor comes in contact with a diaphragm of spun glass. In going through this material at high velocity an electrical action is established which causes the fine particles in the tar "fog" to cling together until they are of sufficient size to drop out of the current by gravity.

At one time this spun glass was only to be obtained from Austria and at the outbreak of the war there was but about 75 lb. of it in the country and this in the hands of the Smith Gas Engineering Co. It was not a very encouraging pros-

pect since no substitute for this material is available in the process employed. But means were found to supply this need without waiting for the end of the war, and similar spun glass can now be obtained in the United States.

The collected tar is kept fluid by heating coils placed in the receiver. This supply of tar is usually employed for firing the boilers furnishing steam to the engines which are used for working the gas pumps.

Figs. 14 and 1 are reproduced from blueprints showing a cross section of the building and a general plan. The manufacturing floor space now in use is 108 by 240 ft., the building being 420 ft. in length. There is also a storage space of 72 by 80 ft. in addition to the large yard area.

The Smith gas producers, which were first used in large power plants, are also here employed on the heating of nut bar stock and for similar purposes. Vanadium steel billets are heated by this gas for rolling. Forgings up to 36 in. diameter are being handled by its aid. Chemically clean fuel is so essential in metallurgical operating and especially in heat treating that the adaptation of the gas producer of this type to these purposes represent an important advance.

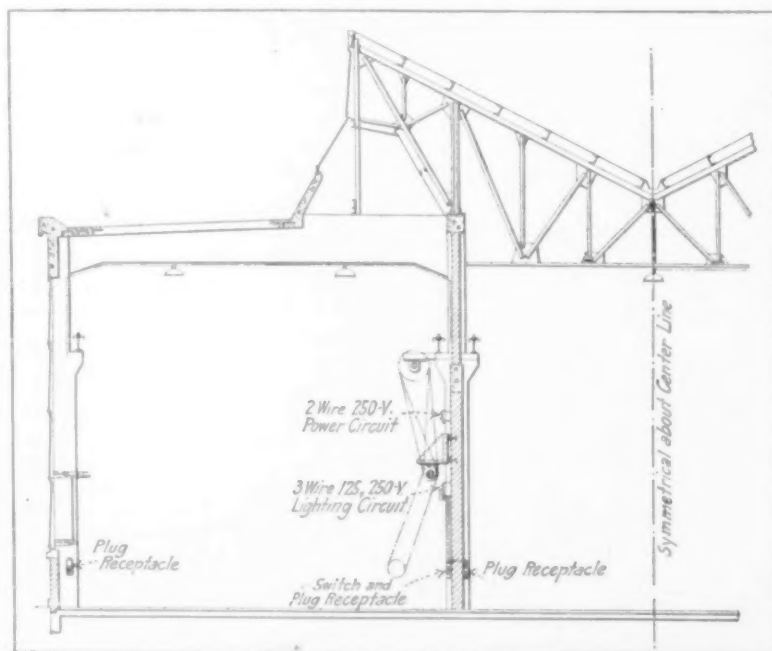


Fig. 14—Cross Section Through Main Building

Efficiency and Democracy in Industry*

The Product Should Bear Only Production
Expense — Idle Capital Is No More
Entitled to Wages Than Is Idle Labor

BY H. L. GANTT

WHY has the word efficiency fallen into disrepute? We all recognize the importance of individual and collective efficiency. There must have been some fatal error in the management of the campaign which at the end of 20 years has made the very name a byword. Many men who have devoted their time to this subject have very much improved our industrial processes and the productivity of our manufacturing plants. Yet in the mind of the average business man or mechanic the term efficiency engineer raises a feeling of hostility. Today we need efficiency, both individual and collective, to a far greater extent than ever before, yet we must promote it under some other guise to have it accepted.

We have in the past measured the efficiency of our business by dollars acquired rather than by goods produced. The efficiency engineer has in too many cases devoted himself to making more efficient the business of securing dollars. He has served the business system primarily in the accumulation rather than in the production of wealth.

A business system bent on accumulation rather than on production of wealth, which would even curtail the production of wealth if thereby a larger measure could be brought into its own coffers, must needs run to the limit of its tether, and a method which makes more efficient such a system shortens the time it has to run. An efficiency engineer who, consciously or unconsciously, served the business system in the exploitation of workmen, necessarily got their ill-will. He later got the ill-will of the business man, who found that the amount of wealth he could get by exploitation was strictly limited. I am not claiming that all efficiency engineers have done this, nor that those who have done it were conscious that they produced a condition to which there must be an end. They simply served business as usual, which puts more effort in harvesting the crop than in producing it.

When the great war broke out in 1914, it became evident that the production of goods for the benefit of the community, and not the production of wealth for the benefit of those who control the industries, was the task for the nations engaged. It took England more than a year to learn this lesson, and we should have been fully prepared for it in 1917 when we were drawn into the maelstrom. That we were not prepared for it, and that many believed we could continue business as usual, is now history. Production for the benefit of the community was the only basis on which we could carry the war to a successful conclusion. This has been emphasized by the elimination of non-essential industries.

There is another reason why the term efficiency is in disrepute. Cost-keeping methods have always loaded upon the part of the shop producing the goods the total expense, including the part of the shop that was idle. In a shop having two expensive machines, it was the habit to load upon the product their expense, whether the goods were produced by one or both. If one machine did the work of two, the product was still charged with the expense of both, and the full benefit from the increased efficiency was not apparent to the owner, who saw only the saving in wages. He did not see the saving in plant. He did not comprehend clearly that if he doubled the output of his machine he could double the output of his plant without additional expense. He was also holding his capital twice as efficient. The term efficiency seemed to have no connection with capital or investment, but only with labor. There was little inducement to the owner to make his machines produce more, and the reverse of an inducement to the workman, who

was thereby laid off or saw his friend laid off. This fatal error caused the opposition of the workman, and lack of sympathy on the part of the employer was evidently due to a false accounting system devised to put all the burden of inefficiency on the workman.

When the war started in 1914 and the wheels of industry slowed down to such an extent that it was impossible for the product turned out to bear the expense previously distributed over a production three or four times as large, most people said, "These are extraordinary times; we shall have to lay our cost system aside till the war is over." Some people, however, realized that a system not good for an emergency has something radically wrong about it, and set to work to find out the flaw. This was the answer they deduced:

"The product of a factory must bear only the expense used to produce it. It cannot bear the expense of idle machinery not contributing to its production." This statement is such a radical departure from ordinary cost-keeping that it shocks the business man who has a theory that he must somehow or other get back all of his expenses. He feels that he is entitled to interest on all the money he has invested, whether it produces anything or not. He is not seriously worried so long as he can sell his product for a price high enough to give him the profit he considers himself entitled to.

Some of the keener business men see the flaw in this argument, and realize that idle capital is no more entitled to wages than idle labor, and have begun seriously to study their plants to find out how they can use them to their full capacity. The result of this investigation is twofold:

- a. It does not result in laying off men, but gives employment to more men, which secures the good-will of the worker.
- b. It not only reduces the expense of maintaining machinery in idleness, but turns out a greater product from which revenue is acquired.

Some would say that this is a beautiful theory, but it doesn't work that way. I answer unhesitatingly, after more than three years' trial, that it does work that way and that none of those people who have adopted it would for a moment think of going back to the antiquated cost-keeping they have given up.

The keynote of such a system is the elimination of idleness and the production of goods. Moreover, there is no antagonism in such a scheme between employer and employee, for each gets the reward for what he does. To the conservatives this would seem almost revolutionary, and fraught with consequences of which they cannot see the end, but it is democratic and absolutely in harmony with the patriotic doctrine which is being preached. It enables us to change automatically our slogan of "business as usual" into "business for production and victory." If we will eliminate our false cost-keeping methods, and put in those that are correct, we shall not only benefit both employer and employee, but go a long way toward the democratization of industry.

The Austin Co., Cleveland, has provided enlarged offices at Chicago by removing to 1374 Continental Commercial Bank Building. The business for the Chicago district will be handled by W. L. Bailey, district sales manager, and a complete construction organization is provided at Chicago. The engineering department is now located there, making plans based on Austin standard factory buildings or working in conjunction with the owner's engineer. Recent contracts of the Austin Co. in and near Chicago and the tributary territory include the R. H. Eddy Foundry Co., Chicago; Laclede Gas Co., St. Louis; General Chemical Co., Hegewisch, Ill., and American Car & Foundry Co., Chicago.

*A paper presented at the annual meeting, Dec. 3-6, 1917, of the American Society of Mechanical Engineers.

Government Contract Adjustment Delayed

Many Contract Adjustments Blocked by Treasury Comptroller — Contracts Not Properly Executed — Legislation May Be Necessary

WASHINGTON, Dec. 3.—Despite a decision by Comptroller Warwick of the Treasury Department that supplemental contracts for the payment of an arbitrary sum in adjustment of cancellations are illegal, the Department is planning to continue its program of contract adjustment. Ever since the signing of the armistice ended hostilities, it has carried out a gradually increasing policy of contract cancellation. The decision of the Comptroller would tie up hundreds of millions of dollars to contractors whom the War Department seeks to remunerate for unfinished work. Under the statute, the Comptroller has the last word and the War Department has no way of forcing him to honor its warrants. For that reason, it is possible that legislation may be necessary to remedy the difficulty.

Government Not Trying to Mulet Contractors

The War Department is in earnest about its intention to protect contractors who undertook heavy obligations in their efforts to speed up Government work. At the same time there seems to be no disposition on the part of the Treasury officials to prevent an honest adjustment of contracts. But the technicalities pointed out by Comptroller Warwick may cause vexatious delay.

The ruling of the Comptroller also threatens to invalidate a long list of contracts which were not properly executed by responsible officers of the War Department. In the hurry of rushing material overseas, many orders were placed by telephone and the subsequent proceedings sometimes were not carried out with sufficient legal exactness to satisfy the demands of the statute or of Comptroller Warwick's ruling. The question has been referred to Attorney General Gregory, who will decide whether Congressional action is necessary to untangle the situation.

Method of Contract Adjustment Outlined

In spite of the announcement of the Comptroller's decision, which he sent to Secretary Baker a week ago, although it was not published until Friday, the War Department has just issued an announcement as to the methods of contract adjustment which it has determined to carry out. This is in the form of a statement by Benedict Crowell, Director of Munitions, saying in part:

The armistice has come when American industry was reaching the peak of its production. There are therefore thousands of contracts outstanding on which commitments for raw material for the future have been made, on which much raw material has been received, on which there is a large amount of work in various stages of completion on its way through the shops.

The Department has first to determine as to each of these contracts whether it is to be carried through, whether the rate of amount of production is to be so reduced that the manufacturer can gradually taper off and get into his accustomed civilian work, or whether the contract is to be terminated at once. These questions have to be decided with due regard to the conditions of the particular industry and the importance of preserving the continuous employment of labor. When decided there remains a very serious problem of how to arrive at a just and prompt determination of what is due the contractor as a result of such reduction or termination of the contract. . . . To meet this situation the War Department has outlined and adopted the following procedure:

The contractor will make an inventory of the raw material on hand, work in process, and finished articles ready for delivery, and any other items of costs, with figures on the various elements of cost which have entered into the getting ready for production, such as new buildings and machinery not otherwise taken care of. This will be checked by accountants of the War Department. These statements in the majority of cases will then be presented to District Boards organized in many of the larger cities which are the centers of production.

A board to deal with ordnance contracts at each of these places will be presided over by the district ordnance chief, who in every case is a civilian and a prominent business man of the community. Another member of the board will generally be the regional advisor of the War Industries Board. Such advisors are prominent business men, often selected for the position by the local chamber of commerce. . . . Another member will be of legal training, another a cost accountant and the fifth a man versed in technical production. The latter three members are generally already available on the staff of the ordnance district chief. With a board so constituted, the public, the Government and the industries will feel assured that a just and prompt settlement may be arrived at. . . .

These boards will endeavor to reach a settlement with the contractor along the lines of the policy laid down by the War Department in Washington. Wherever a settlement can be reached between the contractor and a board, the board will make its recommendation to Washington and the settlement will be finally approved and the amount thereof will be promptly paid in full. Wherever there is a difference of opinion between the board and the contractor, a statement thereof may be made to the several claim boards in this line of work in Washington who will consider the matter from the data presented by the local boards and endeavor to reach a settlement with the contractor. Failing this, there has been set up by the War Department a Board of Contract Adjustment to assist the Secretary of War. This Board, as far as the War Department is concerned, is the final tribunal in such cases. Of course, if the contractor is still dissatisfied with such decision, he may appeal to the Court of Claims.

Special Supplemental Contracts Contemplated

The Department recognizes that it is highly important to make provision for cases where contractors have so much working capital tied up in expenditures on unfinished work that without a speedy repayment of at least a part of this amount they cannot make prompt return of the plants to commercial work. In many such cases, while it is practicable to determine readily a minimum sum which will be within the figure of ultimate settlement, it will frequently be difficult to fix with exactness the ultimate sum without a delay which will lose to the Government and the country the advantage of a speedy return of such plants to commercial work.

Where this situation exists and to meet it, it will be the policy of the Department to stand ready to enter into supplementary contracts by which a sum not to exceed 75 per cent of the amount which it is certain will ultimately be paid by the Government on the agreed basis of adjustment will be paid immediately to the contractor upon his consent to a termination of the original contract and a release to the Government of its obligations thereunder, the Department agreeing to pay subsequently such additional sum as it may determine will complete payment to the contractor on the agreed basis of adjustment. The machinery just outlined will be availed of in arriving at the terms of final settlement.

This plan will make it practicable for contractors to secure almost immediately a very substantial part of their working capital for use in switching back to commercial work, even where the circumstances are such that the final determination of the compensation to be paid cannot be so speedily arrived at.

How the Comptroller's Ruling Was Brought About

Comptroller Warwick's ruling was made in reply to a letter written Nov. 21 by Secretary Baker. In that communication, the War Department submitted the following proposal to the Treasury Department:

The War Department has outstanding numerous contracts for munitions which, in view of the armistice, it is to the public interest to terminate. In many of these contracts the contractors have a very considerable part of their working capital tied up in expenditures for labor and other disburse-

ments on unfinished work made in performance of their contract. It is important in the interest of labor and the industrial security of the country that these plants be returned to commercial work as speedily as practicable and so far as possible without a break in their continuous operation and employment of labor.

The Department believes that many such contractors are willing to forego the prospective profits on the remainder of the work contemplated by the contract and terminate the existing contract on a basis which would amount substantially to compensation for expenditures incurred and profits not to exceed 10 per cent of the cost of the unfinished articles on hand—a basis more favorable to the Government than the terms of the contract would permit—if they can secure promptly a substantial portion of this sum so as to release their working capital for switching back to commercial work. It is practicable for the Department in such cases to readily determine a minimum sum which will be well within the figure of ultimate settlement on this basis, but it is difficult to fix with exactness that ultimate sum without a delay which will lose to the Government and to the country the advantage of a speedy return of such plants to commercial work.

The Department therefore desires to enter into supplemental contracts with such contractors by which a sum well within what it is certain would have to be paid by the Government on such basis of adjustment will be paid immediately to the contractor upon his consent to a termination of the original contract and a release to the Government from all its obligations thereunder, the Department agreeing to pay subsequently such additional sum as the Secretary of War may determine will complete payment to the contractor on such basis of adjustment. The Department desires your opinion as to whether it can enter into supplemental contracts involving this method of payment.

The Department has prepared a form of supplemental contract for use where, if the best interests of the Government and industry and labor are to be secured, it is desirable to make an initial payment to enable the contractor to switch back immediately to commercial work. I transmit this to make clear the procedure the Department desires to adopt. The procedure above outlined has been carefully worked out since and in the light of the discussion in my office Tuesday.

The form of supplemental contract referred to recites the provisions of the original contract and proceeds as follows:

Whereas, a certain (purchase order was issued by.....) (contract was entered into between) the United States (to) the contractor, No....., dated..... (and) therein called "original contract," which term shall also include, wherever used herein, all agreements or orders, if any, supplementary to said contract or purchasing order, except this agreement).

And, whereas, the contractor is willing to accept the termination of said original contract and to forego such profits as might accrue to it from the completion of said original contract and to accept this contract in lieu of said original contract and any and all claims and demands of every nature whatsoever arising, or which may arise, out of said original contract.

And, whereas, the contractor estimates the amount of said expenses and obligations incurred by it in the sum of \$.....

And, whereas, the contracting officer has examined said statement and finds that the amount of such expenses and obligations for which the contractor is entitled to be reimbursed is not less than the sum of \$.....

Now, therefore, in consideration of the premises and of the mutual covenants herein contained, it is agreed between the parties hereto as follows:

1 This contract supersedes and takes the place of said original contract, which is hereby terminated, and the contractor hereby releases the United States from any and all claims of every nature whatsoever arising out of said original contract.

2 The contractor shall furnish and deliver and the United States shall accept and pay for no more articles or work agreed to be delivered under said original contract.

3 All articles or work delivered and accepted on or before the date of this contract under and in pursuance of said original contract and not yet paid for shall be paid for in accordance with the provisions of said original contract as if it had not been terminated.

4 The United States shall forthwith pay to the contractor the sum of \$..... (this being 75 per cent of the amount found by the contracting officer to be the minimum amount for which the contractor is entitled to be reimbursed) and agrees to pay to the contractor such further sum as may be

found by the Secretary of War is the amount which will, when added to the said sum of \$..... herein agreed to be paid forthwith, reimburse the contractor for and hold him harmless against the expenses and obligations incurred by him pursuant to said original contract and properly applicable to the unfinished portion thereof and compensate him for the termination of said original contract, it being agreed that the sum allowed for such compensation shall not exceed 10 per cent of the cost of the unfinished articles on hand at the date hereof, and may be any less sum in the absolute discretion of the Secretary of War.

5. This agreement shall not become a valid and binding obligation of the United States unless, and until, the approval of the Board of Review of the Office of—has been noted at the end of this instrument.

Comptroller Impeaches Validity of Contracts Made by Other Than Contracting Officers

The decision which Comptroller Warwick sent to Secretary Baker in reply to this letter covers the whole question of disputed contract adjustments. Its terms, for that reason, are of the highest importance to the whole iron and steel industry. The decision is in part as follows:

"Having no authority to decide the form of contract, the only question properly for the decision of this office in your submission is whether payment would be authorized of the sum being 75 per cent of the amount found by the contracting officer to be the minimum amount for which the contractor is entitled to be reimbursed. The making of the supplemental agreement and the simple certifying to a minimum amount by the contracting officer upon the statement and estimate of the contractor will not be sufficient nor conclusive upon the accounting officers. The supplemental agreement cannot be permitted to impose a liability upon the Government where none theretofore existed.

Must Inquire if There Was a Legal Contract

"It will be the right and duty of the accounting officers in each case in which such a payment is made to inquire in the first instance that there was a legal contract with the Government made prior to the supplemental agreement (of which the contract date alone will not be conclusive), in compliance with the provisions of Revised Statutes, Section 3744, that the contract be reduced to writing with the names of the parties signed at the end thereof; and, Section 3745, that the oath of the officer personally responsible for the contract appears (as to which a signing by proxy is considered by this office as not permissible, in view of Section 3746, the penalties prescribed being personal to the officer); to require the submission of facts and details showing the basis of the minimum amount fixed by the contracting officer; and that no amount has been paid without adjustment of such claims as the Government may have against the contractor arising out of defective performance, defaults, etc., under the contract, and for this purpose a specific statement will be required of both the contractor and the contracting officer of what the claims of the Government are, or that there are none.

"The general answer accordingly can only be given, that if there is a legal liability of the Government for the amount, of which 75 per cent is paid under the agreement, such payment is authorized.

Terms of Proposed Supplemental Contract Faulty

"For your information, I have to say the tenor of the agreement is that the termination of a contract authorizes a payment to the contractor. It does not reserve to the Government its rights to recover payments improperly made under the original contract and to enforce the liability of the contractor and surety for defects in materials, work done, etc., which may hereafter appear. It refers to 'articles and work' but does not specifically include labor. The provisions of article 3 are objectionable in that they would permit deliveries in the interval to the date of the supplemental agreement notwithstanding notice of the intention of the Government to terminate. In connection with this the provisions of paragraph 5 may involve a delay before

the contract becomes effective. The expenses and obligations of the contractor properly applicable to the unfinished portion of the contracts and to compensate for the termination of the contract (par. 4) furnish no definite standard of compensation; the limitation is not clear, that the compensation shall not exceed 10 per cent 'of the cost of the unfinished articles' on hand at the date hereof, and there is no limitation that the amount payable under the supplemental agreement shall not exceed the amount of the original contract.

"There also is no provision for crediting the value of the property and things, supplies, raw materials, etc., entering into the computation of the compensation, if they remain the property of the contractor, or for giving the Government the option to take them at such valuation.

"If it is the intention that the compensation for termination of the contract and all the liabilities of the Government thereunder shall not exceed 10 per cent of the cost of the unfinished work on hand at the date of notice of termination, a simple provision to that effect would appear practicable in connection with a provision stipulating for inventories of such work and how its cost shall be arrived at and what shall be included therein.

How a Contract Should Be Made

"Assuming that a legal contract for a definite work or quantity of articles is to be terminated by a new contract superseding it; that the Government will not be prejudiced financially by the change or will be benefited; that the Government has no legal method, or none of more benefit to it, other than the execution of a new contract to terminate the old, I think it clear that payment under such new contract is justified and can be made from public money.

"Any form of contract similar to that now considered should not attempt to cover a 'purchase order' as this form does by reference in the first 'whereas.' There may be legally issued purchase orders that it is desirable to terminate, but the term is liable to misapplication. I refer to the fact that there are in the hands of contractors many informal papers, such as letters, purchase orders, procurement orders, etc. These papers generally are intended to be and are preliminary to the execution of contracts. In themselves they place no obligation on the Government. The latter may be liable on a quantum meruit for the fair value of articles delivered and accepted, but it has no legal obligation for expenses incurred, value of incomplete work, material on hand or arranged for, etc., unless a contract in legal form has been made. Of course it is understood a legal contract cannot be made now for articles the Government does not need, and this is true regardless of prior negotiations, or understandings, written or oral.

"As your inquiry does not relate to orders given under section 120 of the National Defense Act of June 3, 1916 (39 Stat., 213), no discussion of the status of such orders is necessary.

"As to outstanding contracts not signed by the officer named as contracting officer, their validity is open to question and is dependent upon proof of the fact, if it be a fact, that the officer who signed was a duly authorized contracting officer and made the agreement with the contractor and that the officer named as contracting officer did not. The statute clearly requires the act of one officer in the making and signing and wholly negatives the idea of one officer signing for another.

"The purpose of Section 3744, Revised Statutes, has been so clearly stated many times by the Supreme Court, and the result of failure to comply with it has been so often pointed out by that court, that I do not cite or discuss the cases. The decisions of this office have followed the interpretation of the statute as announced by that court and have been uniform for 40 years or more.

"This office is anxious to do all in its power to meet the situation referred to in your letter and to facilitate settlement with contractors legally entitled to payment on the termination of their contracts. Cases involving only equitable claims cannot be settled by executive officers without new legislation."

W. L. C.

Coke Inspection at Ovens

UNIONTOWN, PA., Nov. 30—Coke inspection at the ovens is provided in the contracts now being made by Fayette County coke operators with the furnacemen for the first half of next year. While a few of the most efficient producers have maintained such an inspection, the practice was not general. Practically every coke contract being made for the first half of next year is upon the basis of acceptance through inspection at the ovens.

Prices are contingent upon such action as may be taken by the United States Fuel Administration. The present price of coke is now \$6 per ton but the contracts for the first half of next year provide that deliveries shall be made at the current Government price, and in the event the Government abandons fixing the price on coke as it is about to do on coal, the contracts are providing that deliveries shall be made during the remainder of the first half of 1919 at the last prevailing Government price. The action of the Fuel Administration in abandoning price-fixing on bituminous coal was expected in coal and coke circles because of the marked easing up of the coal situation, with the exception of by-product coal. No such action, for some time at least, is anticipated here as regards coke, inasmuch as coke is closely related to the steel industry and governmental action as to coke will be regulated, it is believed, by orders affecting the steel industry.

Coke inspection at the ovens will maintain a higher efficiency and more uniform quality of fuel for the furnaceman. It will also eliminate danger of rejection at the furnace and consequent loss through re-routing and heavy demurrage. Heretofore it has been the practice for furnacemen to make their inspection at the furnace and in case coke was found unsatisfactory the shipment was rejected.

For the first time since the war, there is an oversupply of steam coal on the market. The demand for by-product coal, however, cannot be met and a number of the by-product ovens have been forced to use an inferior grade of coal, which produces the by-products but turns out a coke available for domestic heating purposes only. Coal and coke men in the region have been notified this week that several blast furnaces have been banked because of a shortage of coke.

The Connellsville region showed another decided slump in production for the week ended Nov. 23, when the total production in terms of coal was but 523,721 tons, a decrease of 225,663 tons from the record production for the week of Oct. 12. The week's coke shipments aggregated 239,950 tons and the coal shipments 165,796 tons.

Two factors enter into conditions causing the new low level production for the region. One is the influenza, which has been epidemic in the coke region for the past nine weeks. The other is an apparent lessening of effort or decrease in individual production as a result of the signing of the armistice and termination of hostilities. Workers had been pushing steadily forward at the highest peak of their individual effort during the war, and with the termination of fighting they have relaxed considerably. The regional Fuel Administration and operators alike are not making protest for they appreciate that the workers have gloriously earned a little relaxation after the wonderful war record made by them.

The figures for the week of Nov. 23 and of Oct. 12 show how the coke region met the war situation. The increased production was entirely through increased individual efficiency and not through any increase in available labor supply. In fact, the labor supply was a steadily diminishing factor. Alien-born workers, principally Slovaks, met the challenge squarely for they appreciated what the battle meant to them and to their relatives in the oppressed nations of Europe. They responded by working six days a week and oftentimes putting in over hours in the mines that a few extra cars might be loaded.

The drive of the Machinery Club of Chicago which was started Nov. 11 has so far resulted in the acquisition of 200 new members.

A Foundry Supervision System*

A Routine and Set of Reports Designed to Provide a Quick and Accurate Gage of Current Costs and Operations

BY PAUL R. RAMP

EQUIPMENT can be furnished to-day to take care of almost every operation in the foundry. The same is true regarding the buildings. We have construction engineers who are able to design buildings that will permit us to handle our particular class of work to the best advantage.

Many firms, however, spend large sums on new buildings and new equipment and wonder why they do not get the results they are entitled to. The answer is "lack of organization."

A foundry organization should consist of a foundry superintendent in general charge, a foundry foreman in charge of molders, a corerom foreman in charge of core-making, a casting foreman in charge of the casting cleaning room and a general labor foreman in charge of all unskilled labor. A patternmaker foreman in charge of patternmakers and pattern storage.

*From an address before the recent convention of the American Foundrymen's Association at Milwaukee. The author is superintendent for the Cannon, Wynant & Cannon Foundry Co., Muskegon, Mich.

a production clerk, a cost clerk and a timekeeper also are essential.

The size of the shop will determine whether or not a man will be required to devote all of his time to one or more branches of the work.

In order to create and maintain this organization and get results, the foundry superintendent must systematize his work in a manner that will keep him in close touch with the success and the failures of every department and every man in the plant.

We have proved to our entire satisfaction that with the proper information at hand daily, the foundry superintendent or manager can in less than 30 min. know how efficient every branch of his organization is and where he is needed the most. First, he must have a daily labor distribution sheet. This sheet, as shown in the illustration, must be posted early every morning ready for him to look over after his first trip around the shop.

This report must show the money cost of the following operations or departments of the day previous: Patternmaking, hand molding, machine molding, mold-

[illegible]

An Inspection of the Daily Labor Distribution Sheet Shows the Money Cost of the Previous Day's Work for Each Operation or Department

A Glance at the Items on the Daily Production Record Reveals Those on Which Output Is Behind Schedule or Which Have Not Been Started on Time

be done to overcome the trouble. When this report is completed, the foreman must turn it in to his superintendent or to the trouble man, if one is a part of the organization.

Some will say, "This is a lot of red tape. You are loading up the foreman with work that should be performed by a clerk." This is a mistake. The clerical part of the job can be done very easily as the foreman investigates each case.

This report is not made as a record for accounting, but is an instrument to place in the hands of the foundry superintendent to use to get prompt action out of his foremen on all defective work.

Should a foreman complain that he is too busy to do this work, we are overloading him, or he is not big enough for the job. If one foreman has so many men directly under him that he is unable to spare the time to investigate the cause of their losses, and teach them how to overcome their trouble, we can feel safe in deciding we have a weak spot in our organization that should be strengthened at once.

This report also informs the foundry superintendent as to how a foreman is handling his men. It is surprising how many foremen there are who trust to luck and their men and get away with it. It is also surprising and very gratifying to know how much more a good man can do toward making better castings and cheaper castings if he works at the job systematically.

We have found that it is more important to try and induce the foreman to work at his part of the job steadily than the men under him, as the latter will get in line if the foreman is on the job. And this Defective Work Record was designed simply to make the foreman do the things he should do in order to give his employer the best there is in him.

In order to secure the workmen's excuse, he must visit him and talk to him about the bad work. At this time he will naturally tell him how to avoid the loss in the future, and why his excuse is not legitimate.

In order to give the foundry superintendent an intelligent report on what he believes to be the real cause of the defect or loss (under the head of Foreman's Report) he must inspect the casting. This gets him out where we want him every morning—to the scrap pile. The fact that he is obliged to specify what he considers the remedy to cure the loss puts his ideas in the hands of the superintendent, who will be in a position to help him if he needs help.

There is sometimes a connection between the cleaning room foreman or the casting inspector and the molder that tends to influence the report under the heading "Nature of Defect." For this reason we leave the entering of the man's name to the foreman in charge, and leave the cleaning room foreman in ignorance of who the molder is that made the bad or defective work. We know that some foremen will neglect this work and fill in the molder's excuse, the foreman's report and the remedy to be applied without visiting the molder's floor or seeing the defective casting. But if the foundry superintendent is on the job, he will make it his business to regularly visit one or more molders per day and check up the excuse the report states they have given for their losses. He will also look up regularly one or more defective castings and see how the foreman's report checks with the real causes. This will always catch the foreman who is trying to get along without doing his work according to the orders he has received.

This report is very effective in creating an efficient foundry organization. It automatically tries out each foreman and puts a record in the hands of the foundry superintendent that can be compiled and used to great advantage by him in making important changes in his supervision. Aside from this, if this system is insisted upon and continued from day to day as intended, we know from experience that the percentage of defective and bad work will decrease.

This report is not intended to be used in connection with the foundry cost system, unless the cost department can use it without any changes. It is designed for the benefit of the foundry management to

enable it to handle this part of the organization with intelligence and dispatch.

When a new pattern is started in the molding room the foreman to whom it is given should make a special effort to secure the best production of good castings per day possible. Very often established daily production on the new job falls below the estimate because the foreman in charge does not give the man on the work enough of his personal attention.

In order to force the foreman to visit this man at least once every hour, we require of him an hourly progress report as shown in the accompanying sheet. He is expected to visit the new job every hour and jot down the progress made by the workman, seeing if he is up to the point in his production he should be. The foreman must find out why and help him to get up to the schedule before another hour has passed if possible.

It is better that a man be checked early in the day and brought to account for lagging than to wait until the day is over and call his attention to his shortage. If at 9 a. m. he is behind he should be helped at that time and as a result his daily production will be greater than if he is allowed to go his own way until the end of the day.

This report is made on new jobs or old jobs that have been improved only. The foreman must not be allowed to have the clerk take up this report, as the idea is to get the foreman to this floor at least every hour until the production has been established. And the hourly progress report will show the foundry superintendent what progress is being made, and that the foreman is watching the job.

The weekly improvement record is a blank that will work wonders if the right force is put behind it. Every foreman feels that he should receive credit for any improvements he makes in his department and it is a pleasure for him to be able to turn in a report covering such progress at the end of the week, which he knows will be placed on file to his credit.

The fellow that is not ambitious, but is aware of the fact that there is a weekly improvement report blank being used in the shop, feels that he must, at least occasionally, turn one in and this puts him to work trying to create something that will keep his name on the list of progressives. If each foreman turns in one substantial improvement report per week, the organization is effective and the foundry superintendent or manager has reason to congratulate himself.

There are many good men who would make efficient foremen if they were given more instructions on how to plan their work. The writer has developed good foremen out of men who were working themselves to death and accomplishing nothing by preparing for them a personal schedule, specifying what they should do at certain hours in the day.

For instance, from 7 a. m. to 7.30 a. m. visit every molder and see if he has the necessary equipment or a job to start, etc. From 7.30 to 8 a. m. put men to work. From 8 to 8.30 a. m. order cores for the following day, and take up with the core boss any complaints about his cores. From 8.30 to 9 a. m. visit every molder's floor whether you have any business with him or not. This schedule should be made out to take care of every half hour of the day.

The description of a home-made guard for a boring machine illustrated in THE IRON AGE of Nov. 14, showing the protection afforded the driving belt and pulley, referred incorrectly to the protective device over the boring bit as also of home manufacture. This boring bit guard, however, is a standard aluminum protecting sleeve, manufactured by the J. A. Fay & Egan Co., Cincinnati.

A Machinery Import Association has been formed in Sweden to deal with machinery, vehicles, apparatus, instruments, tools, iron and metal manufactures, iron tubing and goods which cannot be referred to any other import association.

A Comprehensive Stock Record Form

BY D. O. BARRETT

This stock record blank may be used either as a card or in book form equally well. It is the result of experience with several which entailed considerably more labor to operate. The idea of this form was to follow through any one piece from the time the order was placed until it became a finished part, this to be done all on the one form, eliminating looking up two or three records to determine how many parts are on hand in the various stages and then usually ending up by going out and making actual count because an entry had been neglected.

Material in three stages is cared for, raw stock, stock in works and finished stock. When the original order is issued for material, either for castings to be made in the same factory or for purchased material,

The Government's Russian Bureau

WASHINGTON, Dec. 3.—The War Trade Board has announced the formal incorporation of its Russian Bureau, with a capital stock of \$5,000,000. It proposes to help the Russians in stabilizing their economic situation. Its capital stock has been issued and fully paid in cash out of Government funds. The stock is owned in its entirety by the United States Government.

The company, says an announcement of the War Trade Board, will engage in the business of exporting to Russia and Siberia agricultural implements, shoes, clothing, and other commodities which the Russian population need, bringing back Russian and Siberian raw materials in return. The company thus is intended to aid in supplying the needs of the people in Russia, in encouraging Russian production and trade, and assisting in the marketing of Russian products in America.

AISLE <u>6</u>		NAME OF PART <u>Cylinder</u>		PART NO. <u>B 80</u>	
ROW <u>L</u>		MATERIAL <u>Cast Iron</u>		MAX. <u>35</u>	
BIN <u>9</u>		B. M. No. <u>E 70 H. P. 16</u>		MIN. <u>15</u>	

RAW STOCK								IN WORKS			FINISHED STOCK						
ORDERED		RECEIVED			Soll on Order	On Hand	Total	Order No.	Date	No.	RECEIVED		On Hand	ISSUED			Total
Order No.	Date	No.	Date	No.							Date	No.		Order No.	Date	No.	
758	6-16	16	6-18	5	11	5	1	1368	6-20	4	6-21	3	3	5136	6-23	2	1
			6-21	11	-	12											
813	6-25	10	6-28	10	-	22	2	1417	6-30	20	6-30	20	21	8580	7-2	14	7
						-	-	1534	7-5	2	7-6	2	9				

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

Blank for Stock Records

a copy of the original order is sent to the cost clerk or stock room foreman wherever the records are kept. Proper entries are made and the order then returned as it can be located at any time desired and all the vital information is contained on the card.

Referring to the card, sixteen castings were ordered from the foundry and five were received, leaving eleven "Still on Order." Four of these were put into the works on Order No. 1368, leaving a balance in "Raw Stock" of one, as shown by column 8. Three of the "finished parts" were received on "6-21" and two were later issued on Order No. S136, leaving a "Total" of one "On Hand," as shown by column 18. Eleven castings were received 6-21, making 12 "On Hand," column 7.

It will be noticed that the number of pieces of raw stock are shown by either column 7 or 8; by 7 first and then by 8 if any have been issued to the works. The same applies to "finished stock," the total of which is shown by both columns 14 and 18. If column 18 is not filled on any one line the total is shown by column 14, but if a number has been issued later then column 18 shows the total.

It is thus possible to use the lines entirely across the card and after once using the card no confusion results from the use of the two totals on the one line.

Ferromanganese Imports Small in September

Imports of ferromanganese in September were only 102 gross tons, or the lowest for any month since the war started. The August imports were 3743 tons. The total imports for the nine months ended Sept. 30, 1918, were 26,271 tons, as compared with 38,875 tons for the same nine months in 1917.

Exports of ferromanganese in September were 234 tons, as compared with 284 tons in August. The entire export movement of this material for 1918 to Oct. 1 amounted to 3404 tons, as compared with 1139 tons to Oct. 1, 1917.

and their exchange for American goods. One of the chief objects which it will have in view will be the encouragement of private capital to engage in trade in Russia and Siberia as shipping becomes available for the purpose. Its policy will be to co-operate with, encourage, and promote such trade with Russia as will assist in the rehabilitation of her economic life, and to cover by its direct operations only such portions of the field as cannot at present be served readily by private enterprise.

The company has already begun the transaction of business by the dispatch of three vessels from the Pacific Coast to Vladivostok carrying commodities which its representative in Siberia has designated as being most urgently needed there. By addressing the Russian Bureau, persons interested in Russian trade may receive more detailed information as to the commodities most needed by Russia and the commodities likely to be available for export from Russia. Additional vessels will from time to time be scheduled, and shippers are urged to file applications for licenses to export to Russia such commodities as they know to be needed.

The head office of the Russian Bureau is in the War Trade Board Building at Washington, D. C. The board of directors of the company consists of the members of the War Trade Board. Vance C. McCormick, chairman of the War Trade Board, is president of the company; John Foster Dulles is secretary and treasurer, and Henry B. Van Sinderen is acting manager. The directors are Vance C. McCormick, Thomas L. Chadbourne, Jr., Edwin F. Gay, Albert Strauss, Alonzo E. Taylor, J. Beaver White, and Clarence M. Woolley.

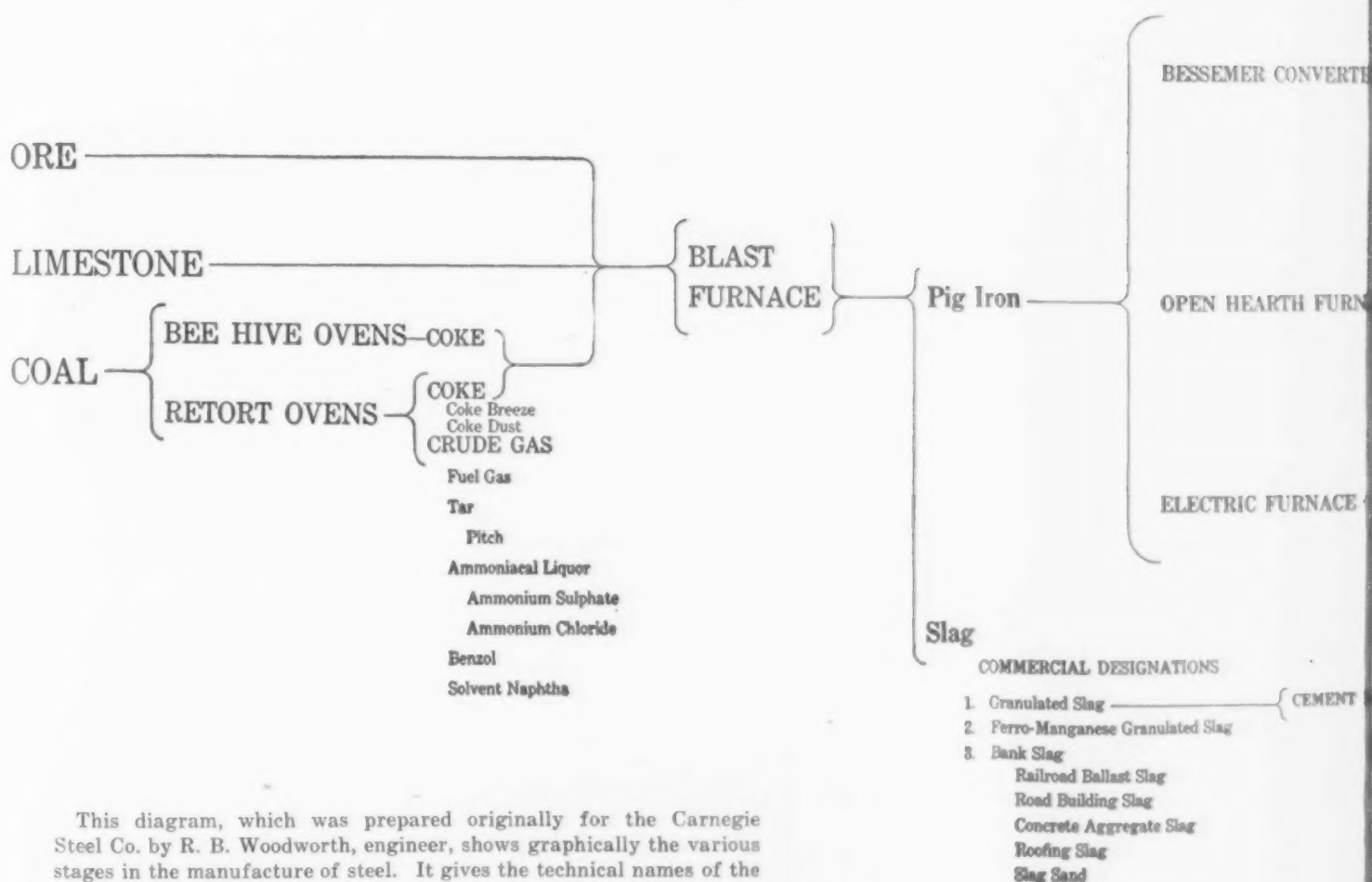
O. F. S.

The Industrial Commission of Wisconsin has issued a circular to all employers of children in the State, calling attention to the relation between the child labor law and the workmen's compensation act, through which compensation is trebled in cases where a minor employed at a forbidden machine is injured.

DIAGRAM

PRODUCTS OF MINES AND QUARRIES

IRON WORKS AND PRODUCTS

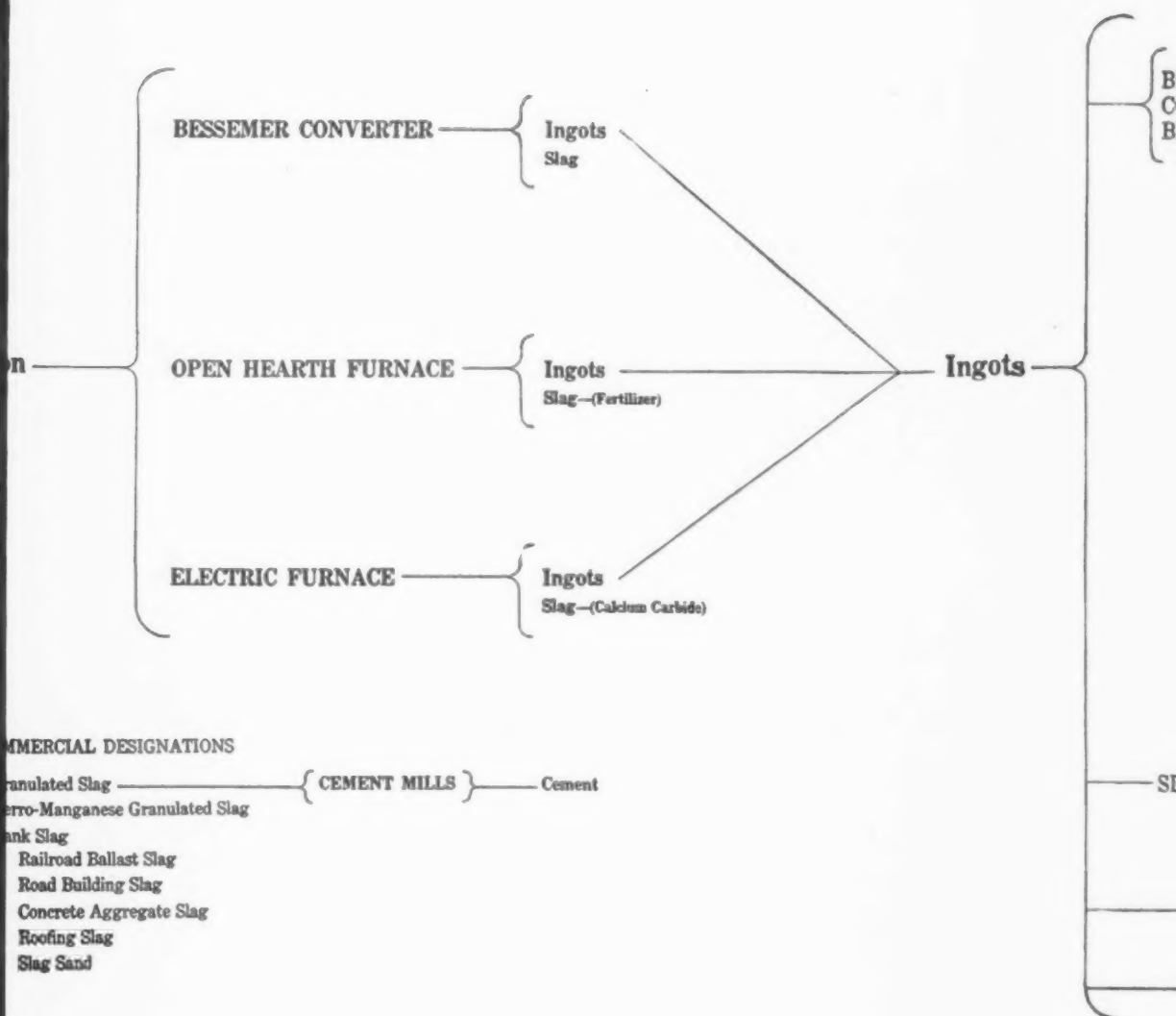


This diagram, which was prepared originally for the Carnegie Steel Co. by R. B. Woodworth, engineer, shows graphically the various stages in the manufacture of steel. It gives the technical names of the various equipment used in the manufacture of pig iron and steel and the raw, semi-finished and finished products obtained therefrom in the various works of the United States Steel Corporation.

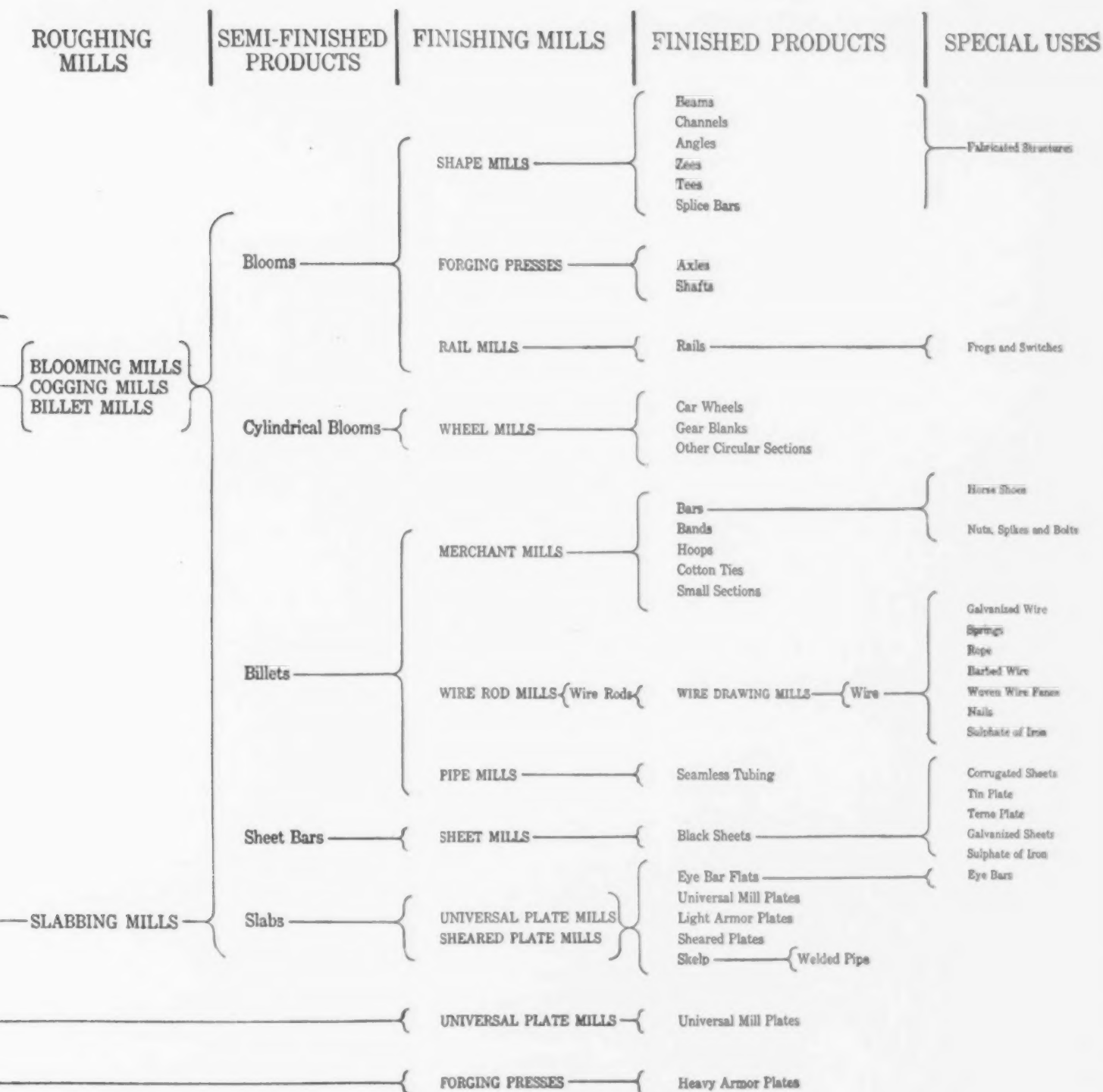
DIAGRAM OF STEEL MANUFACTURE

PRODUCTS

STEEL WORKS AND PRODUCTS



FACTURE





COUNCIL OF NATIONAL DEFENSE

Report of the Work of This Great Department for War Organization

The following statement is authorized by Grosvenor B. Clarkson, acting director of the Council of National Defense:

The second annual report of the Council of National Defense, composed of the secretaries of War, Navy, Interior, Agriculture, Commerce and Labor, just made public, in reviewing the story of the work of the Council during the fiscal year ended June 30, 1918, tells also the story of a very large part of the Government's activities in the war of a non-military character. Particularly is this true of the transition period included in the first six or eight months of the war, during which the initial mobilization of the country's industrial and commercial resources took place. The present report becomes, therefore, an important contribution to the official records of the war.

The report is made by W. S. Gifford, director of the Council until Nov. 1 last, to the Secretary of War, as chairman, to be transmitted by him to the President for submission to Congress. At the end of the period covered by the report, Mr. Gifford points out, the work of initial mobilization, the main task which the Council undertook in the emergency, was largely completed. The Council set out to act as a connecting link between the nation in its normal state and the nation as a machine for making war. This transition period past, the Council's role as a main link in the war government naturally became less active, though it continued to perform functions of a most vital and necessary nature, especially through the great Council of Defense system, made up of State, county, municipal and community organizations, reaching practically every hamlet in the country.

The Council served as a nucleus for innumerable new functions and relations which the war made necessary and for which no administrative agency existed at the outbreak of the conflict. Some of these, after being initiated and partially developed by the Council, were passed on to existing executive departments, while for some the Council created new agencies, either acting under its jurisdiction or given separate jurisdiction by executive order or Congressional act.

Perhaps the best example of the latter case was the War Industries Board, whose work was begun by and developed by the Council and which was separated from it only on May 28 last. Other tasks which received their initial impulse from the Council were the food conservation program, aircraft program, war labor administration, housing and many functions supplementary to those of the regular departments, such as those involved in the storage, shipping, transportation, fuel and medical problems.

The report emphasizes that in mobilizing America's material resources for the Government, the Council has at the same time been vitally concerned in the mobilization of the national spirit. In the effort the Council has been aided particularly by the organizations under the State councils section, with its State, county, municipal and community councils numbering well over 100,000 at the date of the report. Through these local agencies, acting with the local agencies of the Woman's Committee of the Council, the Government has been able to bring home to every section of the country in a way possible only to local agencies the meaning of its policies and the opportunities for individual service in the war.

The other branches of the Council still active at the date of the report were the Committee on Labor, Committee on Engineering and Education, Medical Section and General Medical Board, Highways Transport Committee, National Research Council, acting as the department of Science and Research of the Council, and the Naval Consulting Board, acting as a committee on inventions.

The report is divided into three sections, the first dealing with the history of the branches of the Council

still under its jurisdiction, the second with the War Industries Board up to May 28, the date of its separation from the Council, which, of course, includes much of its most significant work, and finally the story of the agencies dissolved or transferred to other jurisdictions during the year. Among the latter is the highly impressive story of the Commercial Economy Board, transferred in May to become the Conservation Division of the War Industries Board. Almost the whole story of commercial conservation in the United States is summed up in the report of the Commercial Economy Board.

Particularly valuable from the historical point of view as well as that of immediate interest, is a record of the development of price-fixing, which had its beginnings in the early days of the Council of National Defense with informal voluntary agreements on prices negotiated between representatives of industry and members of the advisory commission and of the Council staff. The report reviews the story of the way in which these informal agreements with nothing but voluntary co-operation to bind them developed finally into a definite price-fixing organization under the War Industries Board.

From similar modest beginnings, the original first attempts at regulating Priorities through voluntary co-operation developed into the existing large priorities organization, which at the time of the date of the report was issuing hundreds of orders with binding power behind them.

Much space is given to the work of the large Committee on Labor with its many sub-divisions, which assumed so significant a place in Government activities in maintaining the hearty co-operation of the labor movement with national war policies. Among the specific accomplishments of the committee was the initiation of the Soldiers' and Sailors' War Insurance plan, later turned over to the Treasury Department for administration. An account is also given of the Council's part in developing a plan for war labor administration, turned over by the President to the jurisdiction of the Secretary of Labor.

The report reviews the work of the Committee on Transportation and Communication, which organized the voluntary railroad administrative organization in effect prior to the creation of the United States Railroad Administration. The Council undertook much work in drawing together for the purposes of the war the railroads, the waterways and national highways.

"Special acknowledgment," the report says, "should be made of the valuable activities of the National Research Council which has served as a department of the Council of National Defense, mobilizing and directing the research work of the country's scientific men. Its work has been invaluable in giving the Government war agencies the benefit of scientific research, both directly and indirectly applicable to the purposes of the war."

In reviewing the first steps toward industrial mobilization, the report states: "From the outset the purpose of the Council and its subordinate committees was to offer a channel through which the voluntary efforts of American industrial and professional life could be focused. The story of the way in which the members of these committees, practically all of them serving without compensation, rallied to aid in the common cause and the extent of the practical accomplishment of their voluntary service has probably not been equaled anywhere."

The International Association of Machinists has joined with the National Women's Trade Union League and the National Federation of Federal Employees in a protest to Secretary of War Baker against alleged violations by the War Department of the Government's "labor policies." The protest charges "intimidation of workers, especially in arsenals and munition plants by army officers hostile to labor organizations, and the failure of such officers to maintain the Government standards on the right of workers to organize, equal pay for equal work by women and men, and night work by women."

TRANSFORMATION OF STEELS

Japanese Studies of the Effects of High Temperatures in Carbon and Tool Steels

The Japanese have been contributing interesting data to the metallurgy of iron and steel in the Science Reports issued by Tôhoku University and among these Prof. Kôtarô Honda's name is prominent, particularly in connection with investigations of transformations in iron and steel. Recent papers have appeared on this subject either under his own name or in collaboration with other investigators. The contents of these were recently summarized in the *London Iron and Coal Trades Review*, and they are here abstracted as follows:

The first paper is "On the Transformations of Special Steels at High Temperatures," by Professor Honda, in collaboration with Messrs. Tawara and Takagi, the latter another well-known expert. The authors studied six specimens of carbon steel and other six of special steels magnetically, thermally and micrographically. The methods are fully described in this or previous contributions to the Science Reports.

Change in Magnetization

As regards the six carbon steels (containing from 0.1 to 1.22 per cent), the discontinuous change in magnetization at the eutectic point was observable even in the steel of the smallest carbon content, while in steels containing more than 0.8 per cent, a large part of the magnetization was discontinuously lost by heating or regained by cooling, at the eutectic point. The heat evolution or absorption at the eutectic transformation was very large. The eutectic points during heating were generally by 30 to 80 deg. higher than those during cooling. For all these six steels the magnetic transformation of plain cementite was observable in the vicinity of 200 deg. C., both on heating and cooling.

The six special steels were all of German origin. Their chemical composition is given in the paper. In the case of five there were two peaks in the heating curves in the whole range of temperature up to 900 deg. C. The position of these peaks was independent of the maximum temperatures attained during previous heatings. One was due to the A_2 or magnetic transformation, the other to the A_3 transformation. In the cooling curves of all these five special steels the critical point, A_2 , remained the same, but A_3 occurred at a lower temperature than in the heating curves. In some cases the two points, A_2 and A_3 , coincided in the cooling curves. The sixth special steel, Becker Diamond, gave the magnetic transformation of plain cementite at about 200 deg. C., both on heating and on cooling, like the six carbon steels.

Slow Heating and Cooling

In a further paper Professor Honda publishes the results of his investigation to ascertain the temperatures at which the reversible A_1 transformation in carbon steels takes place in the case of an extremely slow rate of heating and cooling. As this condition involved maintaining a constant temperature of the specimens for two or three hours at the A_1 point, the author did not consider a thermocouple a proper device for the purpose, and employed the method of magnetic analysis, that is, the temperature of transformation was measured by observing the change in the intensity of magnetization during the transformation. The method employed was the same as described in previous contributions by himself and his fellow investigators in the same periodical. A low carbon (0.29 per cent) steel, called "hotyotetu," and 12 carbon steels (0.14 to 1.50 per cent C), of Krupp make were experimented upon. The results of this investigation are summarized as follows:

In the case of carbon steels containing impurities other than carbon, the A_1 transformation cannot reversibly take place, however slow the rate of heating and cooling may be. In the case of pure carbon steel, however, it really does take place.

The temperature of the reversible A_1 transformation for carbon steel is 727 deg. C. At an extremely slow rate of heating the A_c1 point coincides with the temperature of the

reversible A_1 transformation, or comes very near to it. In the case of impure carbon steels the A_{r1} point is much lower than the A_{c1} point, though the rate of heating and cooling may be extremely slow. The difference in the critical temperatures depends on the amount of impurities other than carbon.

The A_{r1} point is independent of the maximum temperature attained in previous heating.

In all the 13 steel specimens investigated, the magnetic transformation of the cementite is noticeable, and the amount increases with the carbon content, its critical point being about 210 deg. C. Professor Honda proposes to call this temperature the A_0 point.

The paper is illustrated with 14 diagrams, showing 13 curves for the steels investigated, and one for pure iron with only 0.009 per cent carbon content. In this last case the magnetic transformation of the cementite is absent.

Tungsten Steels

In a third paper, Professor Honda and Mr. Murakami pick up and continue the investigation of Messrs. Arnold and Read on tungsten steels as given by the British authors in their paper read before the Institution of Mechanical Engineers in March, 1914. The Japanese authors investigated four specimens of magnet steel (one of German, one of Swedish and two of Japanese make). The conclusions arrived at are set out in 10 clauses. Some of these, they modestly state, may not be new, but they believe that the structure of magnet steel and its change with heat treatment are more clearly dealt with in this paper than they were hitherto. The results arrived at by the authors by magnetic analysis were fully borne out by a thermal analysis, and also by photomicrographs taken of the same specimens. The paper is accompanied by nine plates of curves and 12 photomicrographs.

A fourth paper by T. Ishiwara gives the results of the author's magnetic investigation of the A_2 and A_3 transformations in pure iron and steel, conducted under Professor Honda's guidance. A similar paper appeared by E. M. Terry in the *Physical Review* of the American Physical Society. As the result of the Japanese author's own and his fellow workers' experiences, the subjoined table is arrived at containing the reversible temperatures of the five transformations:

Transformation	Temperature	Nature
A_5	215° C.	Magnetic transformation of FeC.
A_1	727°	Eutectic transformation.
A_2	800°—780°	Magnetic transformation of iron and steel.
A_3	903°	Alpha to gamma transformation.
A_4	1390°	Gamma to delta transformation.

In the case of pure iron there are only three transformations, A_2 , A_3 and A_4 . In the case of carbon steels there are five, of which A_1 , A_2 , A_3 take place at definite periods, provided the rate of heating or cooling is sufficiently slow.

New Open-Hearth Furnace in Philadelphia

The Philadelphia Roll & Machine Co., Philadelphia, a subsidiary of the Taylor-Wharton Iron & Steel Co., 30 Church Street, New York, has recently put into operation a new open-hearth furnace. The company will produce heavy steel castings in addition to its regular run of light and medium converter steel castings.

Unofficial conjecture now places the beginning of operation of the new steel works of the Tennessee Coal, Iron & Railroad Co. at Fairfield, Ala., about March next, and the shipbuilding plant of the same company at Mobile is expected to start at the same time.

Under the style of the Swiss Import Association for Iron, Steel and Metal, an organization has been formed at Berne with the object of facilitating the import and export of raw materials and of semi-finished and finished materials from and to Germany, and of distributing and controlling the imported goods.

American Engineers Go to France

At the invitation of French engineers, the American Society of Civil Engineers has appointed from its membership an advisory committee to attend the engineering congress to be held at Paris, France, about Dec. 15 under the auspices of the Societe des Ingenieurs Civiles and the French Government. This convention supplements a preliminary one held last March. The program includes an intensive discussion of maintenance and construction of roads, the development of water power, inland waterways, ports, and of other subjects intended to comprehend every phase of reconstruction and rehabilitation particularly of devastated areas. M. Millerand is president of the congress. The personnel of the American committee is Major J. F. Case of the American International Corporation, chairman; George W. Tillson; Nelson P. Lewis; A. M. Hunt; Prof. George F. Swain; George W. Fuller; Charles T. Main, also president of the American Society of Mechanical Engineers; L. B. Stillwell, also member of American Institute of Electrical Engineers; and E. G. Spilsbury, also member of the American Institute of Mining Engineers.

Remarkable Output of a One-Ton Converter

The Lima Steel Casting Co., Lima, Ohio, has just broken all its previous records. The production of the one 1-ton Whiting Converter, the only one at present installed, was 434.4 tons of good castings for the month of October. Practically the whole output was either direct or indirect for Government work. About 15 per cent of this was under physical requirements for cast steel No. 3. No trouble has been experienced in meeting the specifications. About 60 heats showed the following average physical results:

Elastic limit, lb. per sq. in.	45,000
Tensile strength, lb.	83,000
Elongation, per cent.	27
Reduction of area, per cent.	44

The only melting unit consists of a No. 3 cupola, 32 in. inside diameter. This cupola is of the standard Whiting type with some modifications made by John Sonnenfeld, the superintendent, in order to make it especially adapted for service in connection with the converter. Four hundred and forty-three heats were blown during October and 1,404,000 lb. of iron melted in the cupola. The abnormal production was provoked by the urgent demand of some kinds of castings for direct Government work.

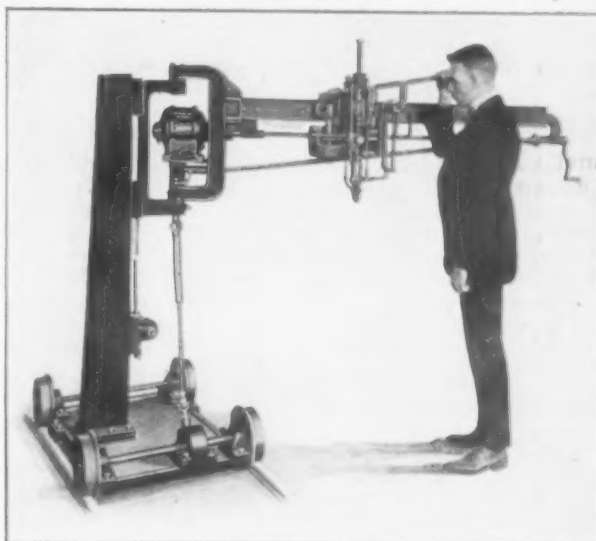
The Department of Scientific and Industrial Research has recently published a memorandum on cutting lubricants and cooling liquids, advises the *Engineer*, London, in which it states that the mineral oils, which are best suited to be used as cutting lubricants, either alone or mixed with animal or vegetable oil, are mineral oils, preferably of pale color, of low viscosity, ranging from 100 seconds to 200 seconds Redwood at 100 deg. Fahr. The lower viscosity oils may be used for high-speed conditions and oils with higher viscosity may be used for slow-speed conditions. Of the animal oils used either alone or in admixture, tinged lard oil containing as much as 10 to 15 per cent of free fatty acid is most frequently employed. Prime lard oil is almost free from acid; it is much more expensive than tinged lard oil, but is less inclined to gum under severe conditions—heavy cut and high speed. Lard oil congeals in cold weather, so that, wherever possible, a mixture of lard oil and low cold test mineral oil is to be preferred on account of greater fluidity in the cold.

As a memorial to its former employees in the military service of the nation the Brier Hill Steel Co., Youngstown, Ohio, has erected a bronze tablet in its general offices, with names of the men in raised letters. The tablet contains 340 names and 125 are to be added, totaling 465, about one-tenth of the total number of workers when the United States entered the war. Included is the name of Capt. John Stambaugh, II, son of John Stambaugh, director and treasurer of the corporation.

Traveling Radial Screw-Driving Machine

A radial type traveling automatic screw-driving machine for work that may be built up on bench or special form and that has screws driven before removal has recently been designed by the Reynolds Machine Co., Massillon, Ohio. It can be equipped to handle a range of screws varying from No. 2, $\frac{3}{8}$ in. to No. 8, 1 in. long. It is essentially a radial type, hung from a column, which if desired may be made movable upon a track made alongside the work or form bench where, because the work is too large to be conveniently handled, a machine must be taken to the work.

The usual spindle bearing, the driving mechanism and screw magazine are mounted on a head which is carried on an I-beam. The I-beam is attached to a pivot bracket that turns in pivot bearings in a saddle mounted on a column and adjustable for height within any convenient working range. This column may be mounted on a stationary base, or if desirable can be attached to a base having wheels that run on and are guided by track rails. The head carrying the magazine and spindle mechanism is mounted on the I-beam with



By Swinging the Arm and Moving the Base to New Positions, a Wide Working Area Can Be Covered by This Radial Type Motor-Driven Traveling Screw-Driving Machine

roller bearings, making for easy lateral adjustment. Power is provided by electric motor mounted on pivot bracket and coupled direct to splined shaft carried under the beam.

The carriage or base has wheel axles mounted in ball bearings. It is moved by hand cranks at the end of the beam near the operator's usual position, the connection to the axle being by means of shaft and universal joints. Gibs are also provided on the carriage to connect with the rails as a measure of safety against accidental overturning.

In operation the driving of screws can be started at either end of the work and longitudinal lines of screws driven by combining swing of arm, movement of head on arm, and movement of the carriage. Lateral or angular lines of screws are driven by movement of head or arm, swinging the arm and moving the base to new positions as required.

While any range of action within reason may be secured, this No. 5 radial, it is stated, will cover a width of 36 in., giving angles of 30 deg., or a width of nearly 4 ft. in direct cross lines at right angles to the column. Any reasonable length can be secured by making provision for the electric wires. The controller for operating motor is carried by same bracket that carries the motor, thus bringing it within easy reach of the operator.

The Donner Steel Co., Buffalo, has completed plans for additions to its plate mill, 18 x 150 ft., 18 x 135 ft. and 18 x 90 ft., one story, of steel construction, to cost \$15,000. The Lackawanna Bridge Co., Buffalo, has the contract for construction.

Inspection of Steel Arc Welds

Factors Determining Their Character— Penetration and Electrical Tests—Analysis of Welds and Their Heat Treatment

BY O. S. ESCHOLZ*

DETERMINING the character of welded joints is of prime importance, and the lack of a satisfactory method, more than any other factor, has been responsible for the hesitancy encountered among the engineering profession toward the extensive adoption of arc welding. To overcome this prejudicial attitude it is eminently desirable to shape our rapidly accumulating knowledge of operation into an acceptable method of inspection.

How to Determine the Character of a Weld

The four factors which determine the physical characteristics of the metallic electrode arc welds are: Fusion, slag content, porosity and crystal structure. Some of the other important methods that have been suggested and used for indicating these characteristics are:

1. Examination of the weld by visual means to determine:
Finish of the surface as an index to workmanship.
Length of deposits, which indicates the frequency of breaking arc, and therefore, the ability to control the arc.
Uniformity of the deposits, as an indication of the faithfulness with which the filler metal is placed in position.
Fusion of deposited metal to bottom of weld scrap as shown by appearance of under side of welded joint.
Predominance of surface porosity and slag.
2. The edges of the deposited layers chipped with a cold chisel or calking tool to determine the relative adhesion of deposit.
3. Penetration tests to indicate the linked unfused zones, slag pockets and porosity by:
X-ray penetration.
Rate of gas penetration.
Rate of liquid penetration.
4. Electrical tests (as a result of incomplete fusion, slag inclusions and porosity), showing variations in:
Electrical conductivity.
Magnetic induction.

These tests, if used to the best advantage, would involve their application to each layer of deposited metal as well as to the finished weld. This, except-

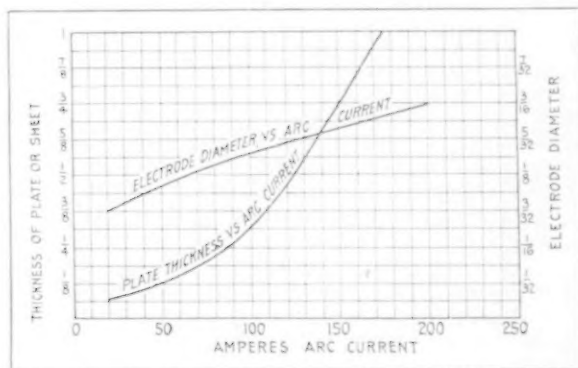


Fig. 1—Values of Arc Current to Be Used for a Given Thickness of Steel Plate, as well as electrode diameter for given arc current

ing in unusual instances, would not be required by commercial practice in which a prescribed welding process is carried out.

Of the above methods the visual examination is of more importance than generally admitted. Together with it, the chipping and calking tests are of particular usefulness. The latter test serves to indicate gross neglect by the operator of the cardinal welding principles, due to the fact that only a very poor joint will respond to the tests.

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The most reliable indication of the soundness of the weld is offered by the penetration tests. Obviously, the present of unfused oxide surfaces, slag deposits and blow holes will offer a varying degree of penetration. Excellent results in the testing of small samples are made possible by the use of the x-ray. However, due to the nature of the apparatus, the amount of time required and the difficulty of manipulating and interpreting results, it can hardly be considered at the present time as a successful means to be used on the large-scale production.

The rate that hydrogen or air leaks through a joint from pressure above atmospheric to atmospheric, or from atmospheric to partial vacuum can readily be determined, by equipment which would be quite cumbersome, and the slight advantage over liquid penetration in time reduction is not of sufficient importance to warrant consideration for most welds.

Kerosene, of the various liquids that may be applied, has marked advantages, due to its availability, low volatility and high surface tension. Due to the latter characteristics, kerosene sprayed on a weld surface is rapidly drawn into any capillaries produced by incomplete fusion between deposited metal and weld scarf, or between succeeding deposits, slag inclusions, gas pockets, etc., penetrating through the weld and showing the existence of an unsatisfactory structure by a stain on the emerging side. A bright-red stain can be produced by dissolving suitable oil soluble dyes in the kerosene.

By means of this test, the presence of faults has been found that could not be detected with hydraulic pressure or other methods. By the kerosene penetration, a sequence of imperfect structures linked through the weld, which presents the greatest hazard in welded joints, could be immediately located. It must be borne in mind, however, that this method is not applicable to the detection of isolated slag or gas pockets, nor small disconnected unfused areas. It has been shown by various tests, however, that a weld may contain a considerable amount of distributed small imperfections, without affecting, to a great extent, its characteristics.

If a bad fault is betrayed by the kerosene test, it is advisable to burn out the metal with a carbon arc before rewelding under proper supervision. By means of sand blast, steam, gasoline, etc., large quantities of kerosene are preferably removed. No difficulty, however, has been encountered on welding over a thin film of the liquid.

Electrical Test Method

Electrical test methods by which the homogeneity of welds is determined, are still in the evolutionary stages. Obvious difficulties are yet to be overcome before the electrical test is feasible. Some of these are the elimination of the effect of contact differences, the influence of neighboring paths and fields, and the lack of practicable, portable instruments of sufficient sensitivity for the detection of slight variations in conductivity or magnetic field intensity. No simple tests are plausible, excepting those which involve subjecting the metal to excessive stresses, for determining the crystal structure. Control of this phase must be determined by the experience obtained from following a prescribed process.

The inspector of metallic arc electrode welds may consider that through the proper use of visual, chipping and penetrating tests a more definite appraisal of the finished joint may be secured than is possible in either riveting or concrete construction. The operation may be still further safeguarded by requiring rigid

adhere to a specified process. Good results are assured if correct procedure is followed.

Hazardous welding can no sooner produce an acceptable product than hit-or-miss weaving will make a marketable cloth. It is only logical that all the steps in a manufacturing operation should be regulated so as to obtain the best possible results. As it is, and most unfortunately, most welders consider themselves pioneers in an unknown art that requires the exercise of a peculiar temperament for its successful evolution. As the result, welding operators enshroud themselves in the hollow glow of an expert and do their work with a mysterious camouflage bewildering to the untutored. Once in a while, due to, we might say, coincidences, these "experts" are successful in obtaining a good weld, but more often the good weld is attributable to the friction between slightly fused, plastered deposits.

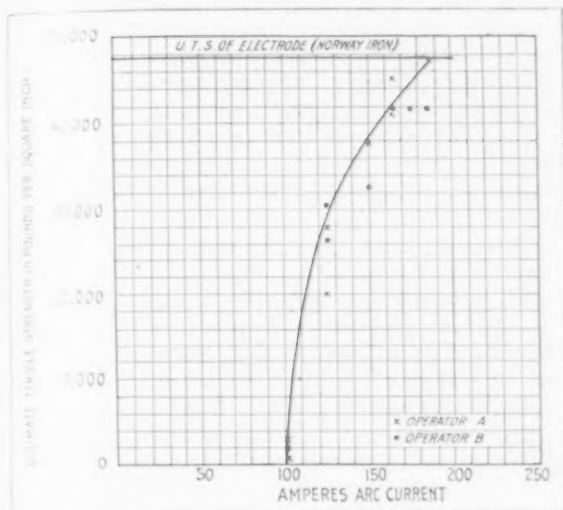


Fig. 2. Variation in the Strength of a One-Inch Square Welded Joint as the Welding Current Is Increased

Analysis of Arc Welds

In common with all other operations, metallic electrode arc welding is really susceptible to analysis. Regardless of the metal welded with the arc, the cardinal steps are:

- Preparation of weld.
- Electrode selection.
- Arc current adjustment.
- Arc length maintenance.
- Heat treatment.

Sufficient scarfing is involved in the preparation of the weld, as well as the separation of the weld slants, so that the entire surface is accessible to the operator with a minimum amount of filling required. When necessary to avoid distortion and internal stresses due to unequal expansion and contraction strains, the metal is preheated or placed so as to permit the necessary movement to occur.

The electrode selection is determined by the mass, thickness and the constitution of the material to be welded. An electrode free from impurities and containing about 17 per cent carbon and 5 per cent manganese has been found generally satisfactory for welding low and high carbon as well as alloy steels. This electrode can also be used for cast-iron and malleable-iron welding, although more dependable results, having a higher degree of consistency and permitting machining of welded sections, can be obtained by brazing, using a copper-aluminum-iron alloy electrode with the aid of some simple flux. Successful results are obtained by brazing copper and brass with this electrode. The diameter of the electrode should be chosen with reference to the arc current used.

Effect of Too Low Arc Current Values

A great many companies have attempted welding with too low an arc current and the result has been a poorly fused deposit. This is due largely to the over-heated characteristics of most electrode holders, on

using current value, and thus leading the operator to come to the conclusion that the current used is in excess of the amount needed.

The approximate values of arc current to be used for given thickness of mild steel plate as well as the electrode diameter for a given arc current may be taken from the curve in Fig. 1. The variation in the strength of one-in. square welded joints as the welding current is increased is shown in Fig. 2.

Electrodes Available Give Satisfactory Results

Notwithstanding that the electrode development is still in its infancy, the electrodes available are giving quite satisfactory results. However, considerable strides can yet be made (with its further evolution) in the ductility of welds, consistency in results, as well as in the ease of utilizing the process.

The maintenance of a short arc length is imperative. A short arc is usually maintained by a skillful operator, as the work is thereby expedited, less electrode material wasted, and a better weld obtained, due to improved fusion, decreased slag content and porosity. On observing the arc current and arc voltage by meter deflection or from the trace of recording instruments the inspector has a continual record of the most important factors which affect weld strength, ductility, fusion, porosity, etc.

Heat Treatment and Inspection

The method of placing the deposited layers plays an important part on the internal strains and distortion obtained on contraction. It is possible that part of these strains could be relieved by preheating and annealing, as well as by the allowance made in preparation for the movement of the metal.

The heat treatment of a completed weld is not a necessity, particularly if it has been preheated for preparation and then subjected to partial annealing. A uniform annealing of the structure is desirable, even in the welding of the small sections of alloy and high-carbon steels, if it is to be machined or subjected to heavy vibratory stresses.

The inspector, in addition to applying the above tests to the completed joint and effectively supervising the process, can readily assure himself of the competency of any operator by the submission of sample welds to ductility and tensile tests or by simply observing the surface exposed on cutting through the fused zone, grinding its face and etching with a solution of 1 part concentrated nitric acid in 10 parts water.

It is confidently assumed, in view of the many resources at the disposal of the welding inspector, that this method of obtaining joints will rapidly attain successful recognition as a dependable operation to be used in structural engineering.

More By-product Ovens

The Pittsburgh Crucible Steel Co., Midland, Pa., has started work on the construction of 100 by-product coke ovens to supply coke for its blast furnaces and gas for its steel mills. The Providence Gas Company, Providence, R. I., will install 40 Koppers ovens, and the Domestic Coke Corporation, Cleveland, will build a plant of 60 ovens at Fairmont, W. Va., work being already under way.

Peace will have no effect on the by-product plants of the Sloss-Sheffield Steel & Iron Co. and the Birmingham Coke & By-Product Co., Birmingham, Ala., both of which will be continued to completion. The Birmingham Steel Corporation says its fabricating plant will be in operation by February. The Shelby hardwood by-product plant is expected to be completed by January.

E. H. Coville has been appointed receiver of the Patterson Mfg. Co., Holly, Mich. This company, which was organized in 1909 as the successor of the Holly Wagon Co., has been manufacturing wagons, trucks, sleighs and implements, but for some time the concern has been busy on war orders.

Building a School on a Business Basis

Engineers as Directors in a Unique Dayton,
Ohio, Enterprise — Commercial Initiative
and Other Unusual Aims of the Curriculum

BY ROBERT I. CLEGG

FROM a list of the directors of the Moraine Park School at Moraine City, near Dayton, Ohio, it is easy to believe that this will be an uncommon place of instruction. It includes the names of George B. Smith, president and treasurer; Arthur E. Morgan, vice-president; F. O. Clements, secretary; Col. E. A. Deeds, Charles F. Kettering, Charles H. Paul, Fred H. Rike, Adam Shants and Orville Wright. This group of engineers, so successful in other pursuits, are not likely to fall short in their treatment of the problems of education, especially when the output of such a school will be their own children. As might be anticipated, therefore, this school is distinctly different.

Problems of training are to the front in these days. Employees as well as sons and daughters must be studied to determine what is best to do with this most precious of all raw materials. Old methods are going to the rear and every promising plan is a new line of trenches.

First of all, one must not expect too much in the way of a repetition of old courses and school paraphernalia at the Moraine Park School. As a matter of fact, the building was not designed for the purposes for which it is used, having been a part of the greenhouses on the estate of one of the school directors.

Starting with the thought that a truly educated man not only sees through things but sees them through, a good deal of study was given at the outset to finding an educator capable of meeting the radical requirements of the engineer directors. Sufficient salary was promised to make the proposition pay better than the one held by the superintendent of the city of Dayton. The choice in a list of several thousand candidates fell upon Frank D. Slutz as principal, and he and five other instructors constitute the teaching force for some 80 boys and girls, whose ages range from 6 to 17 years, from the era of the kindergarten to that of admission to college. The first regular term began in June, 1917, with a total enrollment of 60 for that year.

Emphasis is put on the principles that education is not all gained from books; that the printed

page is to be valued but not worshiped; that there is plenty of teaching material right at hand to be used directly and practically; that schools should be a community where the pupils learn to live as good citizens; and that education to serve must teach the mastery of the arts of life.

In the school the children are engaged in community enterprises, in self-government, in community plans and projects. They are encouraged to learn by doing, to be independent, to be thorough but rapid, to finish a job and pass on to further labors, regardless of whether others finish their work at the same time. They are taught to associate with people, to be interdependent as well as independent, to express themselves clearly and accurately, to earn and spend and save money properly, to make raw material into useful products, to appreciate the spiritual and intangible values of life, to be altruistic, to know and love the world of nature, to play with fairness and enthusiasm and regularity, to know how to choose friends and mates and chums.

The table shows in detail how the studies are coordinated without impeding the ordinary school studies; in fact, the records show a surprising and unusual progress in the common branches of elementary education.

There is a system of self-government with three commissioners elected annually, who in turn appoint a community manager having charge of departments of public safety, welfare, recreation, finance, law, etc.

Perhaps one of the most notable of the plans used to give the children a practical knowledge of the kinds of work required of them in community life after the school days are over is the "project" system. Of these projects there are about a score. In certain cases they are conducted by an individual but sometimes companies of the children are formed to carry them along.

There is a bank making collections, accepting savings deposits and checking accounts, and organized for profit; not a make-believe affair, but a bank handling real money.

A number of chemical laboratories are conducted by



The School Near Dayton, Ohio, where the Children of Engineer Fathers are Educated in a Unique Way

boys. They make the chemicals used in the "photo shop" of the school. Other chemicals are manufactured for sale elsewhere.

School supplies, athletic apparatus, candy, are handled in a store by boys who not only gained a commercial training but made profit enough at it to buy a cash register out of the proceeds.

A school print shop gets out a monthly house organ and also has equipped the boys for employment of a like kind elsewhere. Of course the various school "projects" get their printing done here and pay a profit on it.

when the boy may put his whole time and attention to the project he has under way.

Gardening is a Saturday morning pursuit, but when this outdoor work is not seasonable the time is spent in visiting factories and other business establishments. In fact, one director of the school, when asked if they planned a special building, said that the school structures would really be the plants of the rapidly growing industries of that vicinity.

The school is not exclusive in the snobbish sense of the word. There are pupils whose parents are

GENERAL SCHEME FOR THE SIMULTANEOUSLY-CONDUCTED STUDIES IN AN ENGINEER-FOUNDED SCHOOL FOR ELEMENTARY EDUCATION

Habits	Skills	Knowledge	School Subjects and Activities	Habits	Skills	Knowledge	School Subjects and Activities
For the Occupation of Congregating				For the Occupation of Creating			
Courtesy Honesty (to others) Tolerance Obedience Punctuality Generosity Group loyalty Patriotism Carrying one's end of the load	Tact Persuasiveness Cooperativeness Sociability Versatility	How to judge people, or how to choose a group What is the reason for one's learning to congregate? What is one's share of the load?	Debating Social gatherings Clubs Biography History Studies of types of people Simple sociology Civics Government Sharing work in camp and school	Independence Resourcefulness	Making difficulties into successes Visioning Dreaming Imitating Executing	How to use imagination and knowledge constructively and effectively Why should we all be producers or makers?	Vocational work Group construction Making school plant and apparatus Manual training English composition
For the Occupation of Languageing				For the Occupation of Man-conserving			
Correctness of expression Exactness of expression Truthfulness	Fluency Power to converse Power to talk before a group	How to record and to express accurately Of what value is power to express one's self?	Composition Latin Greek French German Spanish Literature Arithmetic Penmanship Reading Spelling Drawing Graphing Letter writing	Altruism Unselfishness Public spiritedness	Forming public opinion Leadership in some things Fellowship in others	What the laws of social progress are Why should every man work for his group?	Simple sociology History Literature Ethics Clubs, societies, school spirit Study of the institutions of society
For the Occupation of Acquiring Possessions				For the Occupation of Self-realizing			
Industry	Efficiency—business and personal Foresight	How to judge values How to advertise How to organize How to be solvent How to buy and sell How to keep accounts How to invest What should be the aims of acquiring?	Vocational pastime plans Vocational guidance School savings Economics Commercial branches History of industries Study of present-day industries Commercial geography	Honesty (self) Growth Thoroughness Fearlessness Orderliness Cheerfulness Simplicity Temperance Self-control	Keeping out of the rut Finding newer and better ways of doing work Keeping well	How to establish one's self in the scheme of things What is one's place in the scheme of things?	Hygiene Worship Literature, especially poetry Art (inclusive) Music Biography The causes behind science and industry
For the occupation of Cosmologizing				For the Occupation of Pairing			
Careful observation Curiosity Inquisitiveness Attentiveness Alertness Concentration	Interpretation Guessing and checking Seeing essentials Power to make generalizations	How to tell truth from prejudice How to study How to use books properly Of what use is cosmologizing?	Geography Geology Botany Chemistry Physics Algebra Geometry	Personal loyalty Frankness Discrimination Appreciativeness	Giving and getting the best in friendship and partnership Why does one need friends?	How to relate reason and emotion How to make and keep friends Why does one need friends?	Sex education Literature of friendship Inner cleanliness, personal purity studies
				For the Occupation of Playing			
				Gamefulness Fairness Cooperation	Being a good sportsman	How to relax How to play while playing and to work while working What is the use of play?	Athletics Games of all kinds

All broken articles about the school are mended by a repair squad of boys paid a small sum per hour for this work.

Each member of the faculty has a private secretary selected from the students.

Some students keep the typewriting machines in repair and are paid for their time.

Several youngsters have a little company that collects waste paper and bales it for sale.

These are but a few of the enterprises in vogue at the school. A boy freely selects his project, and it is expected to be the center of his interest. He keeps strict account of funds, sales and costs, and prepares definite statements which are regularly examined and criticised frankly by his business associates. Every afternoon in the school term there is a period of at least forty-five minutes

in widely different classes as to their supply of this world's goods. A democratic spirit pervades the institution. The observer, as he notes the children preserve their individuality in the care and personal arrangement of their own partitioned places in the study halls, the washing of their own dinner dishes, or the partnership and community experience in fellowship and business, hunting up customers and selling goods, all interwoven with the common school studies from books, cannot but wonder if this will not in due season provide the standard for other American schools. If so, it would seem that such a contribution, of which this article is but the merest summary in the way of a description, will be of greater industrial and educational consequence than any other invention that has arisen even from Dayton.

Ending Government Regulation of Steel

Price Fixing May Be Terminated Dec. 31— Chairman Baruch on Cancellations and the Outlook for Iron and Steel Consumption

WASHINGTON, Dec. 3.—The gradual demobilization of the War Industries Board and the Thanksgiving holidays postponed the decision on important questions affecting the Government's relation to the iron and steel industry, as well as to the general business interests of the country. All officials, also, waited for the keynote which was to be given them in President Wilson's address to Congress.

Throughout the steel section of the War Industries Board there is still an air of optimism. This has its particular significance because these men are in intimate touch with the changes which the cessation of hostilities has brought to the industry. Probably better than any one else they know the condition of the industry itself, as well as the details of the cancellations that have been going on and the market prospects at home and abroad.

Steel Price Fixing

The big question which is still unsettled is that of governmental price fixing. Announcements that the War Industries Board had decided that there was to be no price fixing on iron and steel after Jan. 1 were, to say the least, premature. There is every likelihood that the present Government prices will be allowed to expire Jan. 1, and that the Government authorities will fix no prices after that date. But there will be no decision until Dec. 11, when the representatives of the American Iron and Steel Institute will come to Washington to thresh out the whole matter with the Price Fixing Committee and the other members of the War Industries Board. High officials of the latter incline definitely to the policy of dropping all price fixing. In this, President Wilson's message confirmed them. But they are willing to listen, and some of the section chiefs have different ideas. Reports from the industry also indicate that there may be pressure in certain quarters for further official prices.

Should prices be fixed for the first quarter of 1919, it seems likely that they will be the continuation of the present scales; but even that is unsettled, for there are suggestions of higher schedules, and it is claimed that if the war had gone on, the Price Fixing Committee would have been compelled to permit some increases.

The demand for the continuation of fixed prices comes from men who feel that it would do much to stabilize the general industrial situation by preventing speculation at a critical time, and also by protecting furnaces and mills which have accepted contracts based upon the continuance of that practice. Many contracts named no prices but were based upon the Government schedule existing at the time of delivery. Some of them defined no alternative price in case there were no Government prices. Here it will be difficult to say whether market prices should govern or whether the price to be paid will be the last Government price fixed. Most of the contracts, however, provided that if the Government had abandoned its price fixing policy the last price so fixed should be the price payable.

War and Navy Cancellations

The cancellations of war contracts by the War and Navy departments still continue. But neither department is making public the details of the adjustment of its contracts. There is still a fear on the part of

the Government officials that a general publication of the size of these cancellations may frighten the public. Particularly do they seem to be afraid that it will have a bad effect on labor. And labor is the chief interest about which the Administration is concerned just now. The Government officials have found it impossible so far to meet all labor troubles, and they realize that these have just begun. Despite the acceleration of demobilization, which is already swamping some of the labor markets, no Government official has been courageous enough to point out to labor the importance of attempting to meet changing conditions. On the other hand the labor representatives, especially those who, like President Gompers of the American Federation of Labor, are credited with dictating the Administration's labor policy, are using every opportunity to induce labor to insist upon the continuation of war-time scales. They have not even opposed the strikes which are cropping out everywhere against a real eight-hour day and the abolition of overtime.

Another complication in the cancellation of war contracts has come through the decision of Comptroller Warwick of the Treasury putting a ban on supplemental contracts intended to compensate manufacturers for canceled orders, and his ruling invalidating contracts not signed by the actual contract officer himself.

Chairman Baruch on Stopping War Waste

An echo of these cancellation troubles has come to the War Industries Board. But the latter has declined to have anything to do with such difficulties. In discussing this with the newspaper men, Chairman Baruch declared that the Government must give consideration to the wishes of Congress and stop any needless production of war materials. But he pointed out that the War Industries Board is not responsible for the arrangements under which contracts are canceled, either with respect to initiating cancellations or making the necessary adjustments. Mr. Baruch declared that in all these matters it was the disposition of the Government to be liberal with the contractors. Where contracts contained cancellation clauses, he said, the basis of cancellation was already established. Where no such clauses occurred, the Government, compelled otherwise to carry on the contract, could find an equitable basis of adjustment. Regarding enlargements by private manufacturers of plant facilities which were made at the instance of the Government and to expand the production of war materials, Mr. Baruch explained that such enlargements had been made under contractual relations with the Government, and that consequently the manufacturer had every reason to expect a fair adjustment.

An Optimistic View

On the general question of reconstruction, both in the steel industry and other businesses, Chairman Baruch insisted that there was no justification for pessimism. On the contrary, he said, he was convinced that for a long and continued period there would be such demand for the products of American industry as would maintain prosperity and insure employment. For years, he emphasized, industry has been dammed up, and unlimited opportunities lie ahead. Regarding reconstruction, Mr. Baruch declared that business men were taking the matter into their own hands, and that while critics talked of the perils of reconstruction the

reconstruction was being quietly carried on. Manufacturers, he declared, somewhat confused for the moment because of the dramatic suddenness of the war's close, are rapidly finding their bearings and charting their own course back to normal conditions. There could be no system devised, he contended, which would be absolute proof against a certain amount of derangement in the business world consequent upon the process of transition, but by no means was this derangement likely to be as serious as painted by the pessimists.

On the other hand, Mr. Baruch declared that he could find no sympathy for the suggestion that the Government should undertake to go into business in competition with private industry. Each department, he announced, has been told not to resell any raw materials in connection with private producers, unless such materials would deteriorate or unless it was necessary to release them to meet a great pressing need on the part of the civilian population. From other governments, he added, have come inquiries as to whether the United States could let them have some of these stored materials.

Mr. Baruch anticipated, he said, no destructive competition on the part of the European countries against American industries due to lower wage scales on the other side. European labor, he believes, will seek and obtain higher wages, and he called attention to the shrinkage in man power in Europe, due to heavy war casualties, as likely to contribute its part in establishing higher wages. Thus, he said, the foreign producers, as well as those in this country, face higher costs.

On Loosing Export Restrictions

Although no definite announcements have been made of the outlook for foreign trade, the report that additional shipping would soon be available, particularly for South America, promised some relief. The War Trade Board made a radical reduction in the export conservation list. In announcing the policy of the War Trade Board, Chairman Vance C. McCormick said:

"The War Trade Board has a function to perform until the peace treaty is signed. Under the terms of the armistice the blockade of the enemy countries is maintained, and the control over exports and imports is to be exercised.

"Sufficient tonnage must be conserved by this control to supply the needs of our 2,000,000 troops overseas to guarantee them all possible protection and bring them safely home. There must be protection assured our Allies, and the distressed and needy nations of Europe in the matter of supplies. When this work has been done, international trade can be quickly restored. Pending that time, I have every confidence that the patriotism and justice of the American people will lead them to exercise patience until these vitally important plans are worked out and normal trade is resumed. In

the meantime, the War Trade Board, in co-operation with the Allies, is relaxing just as far as possible every restriction which does not conflict with the above policy."

Allocations Stopped

Allocations by the Pig Iron Section of the War Industries Board have been abandoned, except for Navy and Shipping Board contracts. The section has received few requests for the cancellation of allocations previously made. In all of these, however, it has taken the position that where contracts actually were made the adjustments must be made between the firms themselves without Government interference.

The Fuel Administration has stopped the allocation of coke for the iron and steel industry. Although there has been a heavy decline in bituminous coal production this seems now to be stabilized. As a result, Fuel Administrator Garfield announced that he is contemplating the possibility of abolishing all price and zone restrictions on bituminous coal after Dec. 15.

Ordnance Department Activities

Definite plans for the future manufacturing activities of the Ordnance Department have not been completed. Until they have, important questions in the relations between the Government and certain war industries will not be determined. The question of the restoration of the Smith & Wesson plant to private ownership, for instance, is to be delayed until these questions are decided.

Major Gen. C. C. Williams, Chief of Ordnance, has appointed three committees to develop plans in connection with the arsenal facilities hereafter to be required for Government manufacture and repair. These committees will report to the Board of Ordnance officers already appointed under the chairmanship of Brig. Gen. John T. Thompson.

The committees and the subjects assigned their consideration are: Colonels John W. Joyes, Charles T. Harris, Jr., and James H. Burnes: All plants engaged in the manufacture of explosives and all loading plants. Col. Earle McFarland, and Lieut. Col. J. S. Hatcher: The establishment of a Government plant for the manufacture of machine guns, pistols and automatic rifles. Col. G. H. Stewart and H. B. Hunt, and Lieut. Col. R. A. Bruse: Manufacture and development of ammunition.

The Arsenal Facilities and Ordnance Manufacture and Repair Board, already appointed, is to prepare and submit a project showing the distribution of the work, the capacity to be provided and the manner and location of the arsenals proposed.

General Williams has also announced the appointment of a board of officers to review the general subject of ordnance proving grounds. This board, consisting of Col. C. B. Gatewood and Lieut. Col. C. J. Browne and B. W. Simpson, will make recommendations for post-war requirements in this line.

O. F. S.

Hard Work Needed in Placing Men Released

WASHINGTON, Dec. 3.—Efforts are still being made by the various organizations of the Department of Labor to find work for all of the soldiers who are being demobilized. How successful these efforts have been the authorities here do not know. So far their work has been marked by great uncertainty. This was due in the first place to the fact that the War Department insisted on doing its own demobilization. Second, the Department of Labor was slow in working out a program for its own participation in the disbanding of the Army. This resulted in a considerable demoralization of the Department's own machinery, particularly the community labor boards, before the work got under way.

Nothing has yet been made public by the Depart-

ment representatives concerning the result of the census that was taken in an effort to find out just where and what industries could most easily absorb the surplus labor that is being sent home from camps, cantonments and the trenches.

The Eight-Hour Day Jeopardized

To add to the troubles of the Department, a large share of the high-paid workers throughout the country have refused to accept a return to the 8-hr. day. Even the efforts of the labor union leaders, who recognize the peril of this refusal, have failed. The workers who had been receiving 11-hr. pay for 10-hr. work refused to return to a straight 8-hr. day. Unless this situation changes materially it seems certain to be the hardest

blow the 8-hr. day propaganda can receive. For if the workmen do not now accept an 8-hr. day as a full day's work it seems certain that the 9 or 10-hr. day will again become an accepted fact and all wages will be based on such a standard.

Even here in Washington the Department of Labor officials found themselves helpless in the face of a strike by Government plasterers who demanded \$1 an hour for their 8-hr. day because the Government had forbidden overtime work. The strike spread to the decorators and it was expected that workmen in other building trades, including plumbers, would follow. The strikers based their position on the declaration of President Gompers of the American Federation of Labor that wages must remain at their war-time standard.

Effect of Army Demobilization on Wages

So far cancellations and the beginning of demobilization of the Army have proceeded so slowly that the effect on wages has only begun. The announcement of Gen. Peyton C. March, Chief of Staff, that the Army authorities had been ordered to speed up their discharges caused double worry. He declared on Saturday that 649,000 men had been slated for immediate demobilization in the camps. Worse than that—from the standpoint of the labor officials who are trying to find places for these men—he announced that all camps had been ordered to hasten their work so that each camp and cantonment during this month must reach a daily discharge average of 1000 men. That would put on the labor market 1,700,000 men by Feb. 1. The overseas demobilization is to add 300,000 a month to this figure.

How this can be done without affecting wage scales no one here is willing to speculate. Nor is there any inclination, even in Congress, to keep war factories going merely to keep labor employed at war-time wages. As far as the individual employers are concerned, there is no indication that many of them are ready to attempt to keep up war wage scales if they have no work for their men, or if the new peace prices do not pay a profit when based on war wages.

One source of unrest disappeared partly during the week—through the commutation of the Mooney sentence in California. It carried with it, however, an aftermath of further agitation. Labor leaders here are far from certain that there will be no labor unrest during the winter months. As a matter of fact, the demobilization has not progressed far enough to warrant a confident assertion that all the home-coming soldiers can be put to work. Spring, of course, will open the way for a new drift to the farms, but the winter months do not include this line of putting men back to work.

Program of Federal Employment Service

The program of the Federal Employment Service for the guidance of demobilized soldiers back to industry is best outlined in a telegram sent by Assistant Director General Nathan A. Smyth to all Federal directors of this service, which is in part as follows:

Our plan of operations in connection with placing a representative of the Department of Labor in every camp under order of the Adjutant General dated Nov. 23 provides for the establishment by this service of a bureau for returning soldiers in every city and large town. Soldiers being discharged at camp and sent home will mostly seek employment at home rather than from camps. The task of finding them occupations thus becomes a community responsibility.

Start at once organizing such bureaus throughout your State, using local offices of community labor boards and public service reserve agents and getting assistance from other organizations in places where the service has no representative. Co-operation of mayors, local councils of defense, labor unions, chambers of commerce, draft board members, county farm agents, and other organizations interested should be sought everywhere and every encouragement given their efforts; giving them representatives in offices if wanted and a share in local management, this service furnishing a central clearing house and uniform system.

Telegraph this office, and through respective State directors to representatives of employment service in camps where men from your State have been sent, the address of each such office in your State as opened and name of men in charge. Keep central control and direction of all work for purposes of clearance and record, but encourage each com-

munity to feel that the work is being done by the community and that the facilities of this service are given for purposes of centralization of information and inter-community clearance. Make every effort to get men back to the farms.

In supplementing this telegram Mr. Smyth also announced that the Council of National Defense has been asked to obtain the support of all State, county and community councils in carrying on this work by co-operating with the Employment Service. The Adjutant General has issued the necessary orders to permit the establishment of a representative of this service in every camp in the country.

Mr. Smyth further says: "The Employment Service as such cannot solve this problem alone; it is a national problem, more especially a community problem. In other words, in order to demobilize the munition plants and our armed forces in such fashion as to avoid suffering and a falling wage scale in the face of continued high cost of living, we are going to require the best thought and the best effort of every community in the United States."

Reorganization of Department of Labor

To meet the reconstruction problems Secretary of Labor Wilson has appointed an advisory committee for the reorganization of his Department. Louis F. Post, assistant secretary of the Department, is chairman of the committee. The other members are A. W. Parker, chief law officer, Bureau of Immigration; Roger W. Babson, director of the Information and Education Service; Miss Mary Van Kleeck, director of the Women in Industry Service, and Grant Hamilton, director of the Working Conditions Service. An announcement from Secretary Wilson's office says:

"The Department of Labor was tremendously expanded to meet the exigencies of the war. It will play a great part in the reconstruction period. A number of the special war services now in existence will be capable of handling various phases of the demobilization problem. Already the United States Employment Service is replacing soldiers and civilian war workers in peace employments and gathering data on local labor conditions upon which demobilization of war industry will be largely contingent.

"Just as the Advisory Council, headed by ex-Governor John Lind of Minnesota, nine months ago charted for the Labor Department the special war machinery which has been used to recruit and distribute labor for production and to stabilize labor conditions, this committee will determine what part of the war machinery should be readjusted and continued permanently. The Department now has eight services and two boards created during the war: United States Employment Service, the Women in Industry Service, Training and Dilution, Working Conditions, Inspection and Investigation, Information and Education, Labor Adjustment and Industrial Housing, National War Labor Conference Board and War Labor Policies Board. Probably the best known is the United States Employment Service, which has 900 branch offices and 4400 employees. This agency of the Department carried on a nationwide campaign to recruit labor for war work, part of the effort being to transfer workers from the non-essential to the essential occupations. Two million and a half workers were directed to war industries in ten months. The task now confronting it is to aid in putting back into industry the 2,000,000 soldiers who will return from Europe, the immense army at home which has been training for overseas, and the civilian war workers.

"The War Labor Board, created to adjust mediation and conciliation controversies arising between employers and employees in the field of production necessary to the war, formulated broad policies and established direct methods that were successful in ending disputes. Up to Oct. 1 its aid had been invoked in 531 controversies, involving more than 2,000,000 workers, and on this date 266 cases were pending. Secretary Wilson has asked the board to continue for the present.

"The need of the War Labor Policies Board arose from the fact that the Federal Government had become

the greatest employer in the country. Its task has been to regulate the relations of services and bureaus in other departments and to recommend to the Secretary unified labor policies to harmonize the industrial activities of the various branches of the Government. Among its problems have been the elimination of labor turnover, adoption of uniform standards, wage stabilization and profiteering."

Councils of National Defense to Help

Grosvenor B. Clarkson, director of the Field Division of the Council of National Defense, has also telegraphed the chairmen of the State, county and community councils and their affiliated organizations to co-operate with the United States Employment Service in the establishment of its employment bureaus for soldiers. His action brings to the support of the Federal Employment Service the aid of 182,432 units in the Council of National Defense's national machinery,

including the 48 State councils, 4000 county councils and 16,000 women's organizations.

In announcing Mr. Clarkson's action, the Department of Labor declared it was important to impress upon the country the necessity for co-operation by every man and woman with the service in its task of finding employment for soldiers and released civilian war workers. It pointed out the danger of widespread unemployment during the transition period, although expressing entire confidence that the change may be accomplished without difficulty if all efforts are devoted to the task of finding employment at a pace equal to the demobilization of the Army and war industry.

Instructions issued by the Employment Service to the representatives of the Department of Labor now being sent to the army camps tell them to work in close touch with the officers and representatives of the Y. M. C. A., Knights of Columbus, Jewish Welfare Board and similar organizations.

O. F. S.

Machine-Tool Builders Plan Their Course

In accordance with a suggestion by G. E. Merryweather, chief of the Machine Tool Section of the War Industries Board, the War Service Committee of the National Machine Tool Builders' Association visited Washington, as was stated in THE IRON AGE of Nov. 28 in a Washington dispatch, and on Nov. 20, 21 and 23 conferences were held with representatives of the War Industries Board, Ordnance Department, Aircraft Board, and the Purchase, Storage and Traffic departments of the General Staff and Navy. In addition to the committee several other members of the association were appointed to attend by President J. B. Doan, who is also chairman of the committee, and about twenty of these were present. Every manufacturing section of the country was thus represented.

At the Washington meeting members representing various manufacturing centers were delegated to call meetings in these territories and explain, so far as possible, to the local builders how matters stood. In Chicago this was done by E. J. Kearney of the Kearney & Trecker Co., Milwaukee. He addressed a meeting at the La Salle Hotel, Tuesday, Nov. 26. It was brought out at this meeting that the unanimous intention of Government officials was to reduce war work, at the same time to inflict the minimum loss on manufacturers and the Government, while guarding the interests of labor to the utmost degree. In the Chicago district, which includes Indiana, Michigan, Illinois and Wisconsin, there are about 30 tool-building firms.

In a communication subsequently sent to the members of the Machine Tool Builders' Association by Mr. Doan, it was stated that while the Government was under the necessity of immediately stopping work on a large amount of war material and equipment, it was the intention of officials to make fair and equitable settlements with all contracting parties.

How to Proceed with Cancellations

The recommendations of the War Service Committee follow:

"On receipt of cancellation or stop orders acknowledge same at once, and where cancellation is not acceptable without loss, state you cannot accept cancellation except on the basis of submitting a claim for settlement which you will present as promptly as possible.

"Wherever your order or your dealer's order is a direct contract with the Government, your claim should be compiled according to the stipulations in your contract. Wherever your contract or your dealer's contract is with a private corporation and contains no specific provision for termination of contract, you should obtain competent legal advice as to the method of compiling your claim. Be prepared to verify each claim in detail in the event you are later called on to do so. It is recommended in making up your claim that a credit be offered for salvage, anticipating that the contractor might elect that you should retain as your property the uncompleted items covered by an order.

"It is recommended that (depending upon the degree of completion of the item or items) you should confer with the contractor as to the advisability of completing same in the public interest, and in the interest of labor. In this connection it would be wise for you to consult with your district ordnance officers wherever contracts referred to cover equipment coming under ordnance requirements. If coming under other departments of the Government consult the nearest district officer for the department concerned.

"Wherever a sale has been made through the dealer, the dealer is the contracting party who should file the claim with the intended user.

"These recommendations are made with a full realization of an obligation resting upon all industry to fairly protect the interest of labor so far as it is possible to do so. Wherever permissible, work should be continued on contract up to date of a positive legal order to stop, and every effort should be made to further utilize such labor as cannot be readily absorbed at this time by the so-called non-war industries.

"As our industry has responded patriotically to the Government's needs in the great task of carrying on the war to a victorious conclusion, it is assumed that each manufacturer will approach the question of settlements in the same broad spirit of patriotic consideration for the Government's present great task of reconstruction."

Finishing 50 Per Cent Work

It is the opinion of well-informed persons in the machine-tool industry that where standard machine tools are 50 per cent completed they will immediately be finished, and it is probable that some will be completed at once where a smaller amount of work has been done, this matter resting between the builder and the purchaser, and due consideration is to be given to whether completion will be in the public interest.

Views of department officials at Washington vary so much in regard to method of compensation adjustments that no clearly defined course stands out, although it is believed that settlements will be made through adjustment boards which will be subordinate to a main board at Washington. It is agreed that subcontractors must be cared for.

Large Suspended Order Is Reinstated

A cheering episode of the week was the reinstatement by the Holt Co., Peoria, Ill., builder of caterpillar tractors, of several orders for machine tools which had been suspended. One of these amounted to \$200,000. It is the understanding that proceeding with these orders is not based altogether on a desire to save tool builders and sellers from embarrassment, but to the fact that the Army has not enough tractors, these having become indispensable in hauling heavy guns. At the same time a desire to ease the situation with the

tool builders was an influence. The Holt Co., in directing that work proceed, quoted as follows from a letter it had received from the Ordnance Department:

"You are instructed to notify your sub-contractors that if necessary to relieve their condition they may resume work on machine tools and other manufacturing equipment on which work had been commenced. Report promptly such individual units of equipment as you find less than 50 per cent completed."

Another cheering factor, especially so far as dealers are concerned, was the result obtained at an auction sale of used machine tools which composed the equipment of the Smith Motor Truck Co., formerly the Smith Form-a-Truck Co., Clearing, Chicago. About 700 persons attended the sale, including many dealers and

manufacturers. It was held Nov. 26. The dealers did very little buying, but they were roused to enthusiasm by the prices which the manufacturers paid. These were invariably equal to what could have been obtained a month ago, and in one or two instances the price of a new machine was paid for one which had been used.

There is some talk of lower prices for new machines, but it is chiefly talk, and while stating their apprehension, some sellers say that if prices do come down too quickly it will be the fault of the makers alone. The labor situation is reported to be easier, not only in that the supply is a little more plentiful, but it is noted that when men are engaged they all report for work, whereas a short time ago some would change their minds and go elsewhere.

Michigan Industries Look for Greatly Increased Trade

DETROIT, Nov. 30.—From all parts of Michigan come reports that the adjustment to a peace basis will be accomplished rapidly and with little difficulty. The two factors which make the future bright for our manufacturers are the demand for their products and the ease with which they can resume production. The greatest individual industry in the State is the manufacture of automobiles and accessories. That the demand for these will be greater than ever is conceded to be certain, due largely to the curtailed production during the war.

Industrial leaders declare that the automobile and allied industries are facing a period of capacity production as soon as the handicaps of transportation, labor and restricted materials are eliminated. Transportation difficulties are lessening through the cessation of great shipments of war goods. The stoppage of the manufacture of war goods will make accessible quantities of raw materials, while the return of soldiers will supply the necessary labor.

The second great industry in the State is the manufacture of iron and steel products. Increase of construction work, the fact that a large part of the iron and steel products are used in automobiles, and the further fact that metal goods will not be imported for some time to come seem to assure that industry a ready market. Lumber and cement concerns are also looking ahead to a period of great prosperity through renewed building activity.

From individual cities come reports of confidence in the future. Jackson, with the Briscoe Motor Co., Hayes Wheel Co., Perlman Rim Corporation, Sparks-Withington Co., Mott Wheel Co., Jackson Cushion Spring Co., Frost Gear & Forging Co. and other large concerns, expects all of them to readjust themselves rapidly to a firm industrial basis and resume their peace manufacture with comparatively little difficulty. The Jackson Munition Corporation, organized by the leading business men of the city, is not so favorably situated. The manufacture of war material apparently did not proceed as satisfactorily as expected and no announcement has been made as to the disposition of the plant. Port Huron, with the Mueller Metals Co. experiencing a great growth, the Port Huron Engine & Thresher Co. ready to produce a great number of tractors, and the Foundation Co. holding large contracts with the Emergency Fleet Corporation running well into the future, has little to fear.

Muskegon, protected by its variety of industries and the phenomenal industrial growth of the past few years behind it, confidently faces the future, according to leading business men of that city. The Continental Motors Corporation has already announced that it will get back on a peace basis with the greatest demand it has ever had. The Brunswick-Balke-Collender Co., which specializes in recreation supplies, believes the demand for its products will be greater than ever. The Campbell-Wyatt-Cannon Foundry, Piston Ring Co., Linderman Steel & Machine Co., Lakey Castings Co. and Standard Malleable Co. are favorably situated for peace conditions, contributing as they do a large share of their products to the production of automobiles and construction work.

Saginaw, whose industrial and material growth resembles that of the recent period in Flint, expects no decrease in its prosperity. Already the Dafoe Shipbuilding Co. and the Saginaw Shipbuilding Co., two of the city's largest concerns, have announced that they not only intend to continue the manufacture of boats, but to increase their plants and add to the number of employees. The Saginaw Malleable Iron Co. is doubling its works and the other metal-working plants foresee an increased demand, while the Jackson-Church-Wilcox Co. and the General Motors Co., both engaged in the automobile accessory business, expect greatly increased business.

Pontiac, whose larger industries are practically all allied with automobile production, anticipates a great future. The General Motors Co., Monroe Motors Co., Oakland Motors Co., Monroe Body Co., Wilson Foundry Co. and O. J. Beaudette Co., representing the largest industries in the city, find themselves very well situated, due to the nature of their products.

Flint, with its Buick, Dort, Chevrolet and other General Motors plants as well, and the Walker-Weiss Co. and Imperial Wheel Co., both accessory manufacturers, is in the same position as Pontiac. The Flint Varnish works seemingly will profit greatly by the resumption of construction.

The great Industrial Works of Bay City is experiencing difficulty in building additions to its plant rapidly enough to meet the demand for its products. The Aladdin Co., which produces knock-down houses, has every reason to look forward to the greatest demand in its history. The Chevrolet Motors Co. is also expected to contribute to the prosperity of the city.

Grand Rapids, the Furniture City, employing several thousand men in this industry alone, expects the accrued demand of two years to bring great activity. There are nine furniture companies in the city which employ each from 300 to 1000 men. The Keeler Brass Co. is on a substantial going basis and does not fear the adjustment period, while the Grand Rapids Malleable Iron Co., expects little difficulty. These are the city's largest metal-working concerns.

Kalamazoo believes that the lessening of transportation troubles will allow its huge paper industries to work at their maximum. These industries alone employ 3000. The Clarage Fan Co., D'Arcy Spring Co. and Harrow Spring Co. are other concerns which expect peace to increase their growth rather than retard it.

Lansing, a larger portion of whose leading industries are engaged in the manufacture of automobiles and accessories than in any of the other cities of the State, has every reason to look for a prosperous period. The Reo Motor Co. employing 5000, operating the largest plant in the city, has already begun its campaign for the production and sale of more of its automobiles than ever before. The Olds Motor Co., Auto Body Co., Duplex Truck Co., Auto Wheel Co., Gier Pressed Steel Co., Lansing Co., and Prudden Wheel Co. are other concerns which will go forward with the growth of the automobile demand.

Battle Creek, which will suffer commercially from the ultimate loss of Camp Custer, hopes to make up

for this in part with an increase in the manufacture of farm machinery and steam pumps made by its largest industries, including the American Steam Pump Co., Union Steam Pump Co., Advance-Rumely Co., Advance Pump & Compressor Co. and Nichols-Shepherd Co.

Smaller industrial centers of Michigan, although not so reliant on their factories for prosperity, anticipate growth of the establishments located in them. The Algon Malleable Iron Co. and Gale Mfg. Co. of Albion; the Dowagiac Drill Co. and Dowagiac Stove Works, Dowagiac; the Hoover Steel Ball Co. and Motor Products Co., Ann Arbor; the Acme Truck Co., Cadillac; the Republic Co., Alma, and similar concerns in Ypsilanti, Sturgis, St. Johns, Ionia and other smaller places are situated fortunately for the resumption of peace activities.

That the transition to a peace basis will not be accomplished without difficulty, but that Michigan con-

cerns generally are in a position to overcome all handicaps, is the opinion of J. G. Hoffman, secretary of the Michigan Manufacturers' Association, who recently returned from a trip through the State. He reports that everywhere he found the business men cognizant of the responsibilities devolving on them through the changing of conditions and confident that concerns which have weathered the handicaps of the war period will come into their own during the coming era. He says: "The solidly financed concerns expect to overcome any handicaps, such as the loss of markets and the changing of equipment, within a short time. The bettering of the transportation situation, due both to the decrease in the shipment of war goods and the more plentiful supply of labor, will greatly help these concerns, which will also find labor for their own use more accessible, while raw materials will evidently be more easy to obtain."

Pittsburgh District Returning to Peace Work

PITTSBURGH, Dec. 2.—Supplementing information published in THE IRON AGE of last week relative to the transition of metal-working manufacturers in the Pittsburgh district from a war to a peace basis, the following statements have been received:

Hydraulic Drawn Forging Co., Ellwood City, Pa., has been making base plug forgings for high explosive shells and two sizes of airplane cylinder sleeve forgings. This plant was built especially for munitions work. It will continue to make forgings similar to those made for ordnance work, but definite plans have not been completed.

Pennsylvania Engineering Works, New Castle, Pa., which has been engaged during the war period in the fabrication of shipbuilding material, will continue in this work. Additions in equipment have increased the capacity of the company's shop by 25 or 30 per cent.

Oil City Boiler Works, Oil City, Pa., is under contract to build boilers for the Emergency Fleet Corporation and present contracts will not expire until March or April, 1919, at which time the company will be prepared to build its regular line of standard boilers for commercial trade.

National Transit Pump & Machine Co., Oil City, Pa., has been manufacturing pumping equipment for the Emergency Fleet Corporation; also pumps for pipe lines. Its regular line of work will be resumed to meet commercial requirements as soon as present contracts are completed.

Garland Mfg. Co., Pittsburgh, formerly the Garland

Nut & Rivet Co., has confined its war work to its regular line, nuts and rivets, and will make no changes in returning to a peace-time basis.

Diamond Forging & Mfg. Co., Pittsburgh, has made drop forgings for war purposes, and will continue this line, but will enlarge its facilities with the object of finishing its forgings. This extension will consist of a fully equipped machine shop.

Petroleum Iron Works Co., Sharon, Pa., states that its war work has consisted of buoys for submarine nets, mine cases and ship-plate material for the American International Shipbuilding Corporation. This company is getting back to its regular line of work, for which all of its present equipment will be serviceable. The output will be increased about 30 per cent as compared with the pre-war period, as the equipment of the plant has been increased during the war. No new lines will be manufactured.

Kidd Drawn Steel Co., Aliquippa, Pa., will increase its production of tool steels.

W. N. Kratzer Co., Pittsburgh, has confined its activities during the war to the fabrication and erection of steel buildings, and now has orders on hand which will require two to three months to fabricate and erect.

Flood City Mfg. Co., Johnstown, Pa., will manufacture mine hoists and pumps, these being new lines. Its work during the war has been chiefly the manufacture of bronze bearings for anti-aircraft guns. The equipment used for this work will also serve for making mine hoists and pumps.

Shipping for the Latin-American Trade

WASHINGTON, Dec. 3.—Negotiations which are now being carried on between the War Department, Treasury Department, and the United States Shipping Board give promise of relief for the American exporters whose commerce to South and Central America has been tied up by the Army's use of the ships that had carried this trade.

As soon as the armistice was signed, Secretary of the Treasury McAdoo, as chairman of the United States Section of the International High Commission, which has fostered our Latin-American relations, began to secure the release of some of this shipping. His first step was to take up the matter with the Shipping Board. With the help of the State Department he also brought pressure on the War Department. So far, however, progress has been slow. Two of the 30 ships taken from these trade routes have been returned. It is probable that they will be put into the New York-Panama service. The Atlantic and Pacific coasts have been stripped bare of their ships.

Army Authorities to Release Much Ship Tonnage.

It is now reported on good authority that the War Department is willing to release a large share of the tonnage which it had commandeered. If the present

plans are carried out it is likely that the Army authorities will give up more than 500,000 tons of ships. Of that total, however, a considerable fleet is expected to be reserved for the Russian traffic and at least 200,000 tons probably will be turned over to Food Administrator Hoover for the provisioning of Europe.

It has been estimated that possibly 200,000 tons of ships suitable for mail and commercial service will thus be left free. How much of this will go into the Central and South American service and how much will be reserved for European trade will have to be determined by the shipping control committee of the United States Shipping Board in New York.

The demand for ships for South America has been accentuated by recent developments. The new Chilean Ambassador, for instance, had to wait eleven days in Colon before he could proceed to the United States because there is not a single ship left on the Pacific Coast routes between the United States and South America. From every one of the South American countries has come an appeal for the resumption of passenger and freight traffic. The situation with reference to the Argentine Republic and Uruguay is particularly difficult. On the other hand, reports received in Washington indicate that the British, French, and Italian lines

are finding it possible to take care of all freight and passenger needs to the various South American ports on both the Atlantic and Pacific coasts.

Vital Needs of Latin-American Trade.

The demands of this situation were set forth in a series of resolutions adopted by the United States Section of the International High Commission, as follows:

The United States Section of the International High Commission, considering the vital importance of transportation by sea in the relations between the United States and the countries of Central and South America, resolves:

1. That the United States Shipping Board be requested to permit vessels now engaged in the transportation of persons and goods between the United States and those countries to continue in such employment, except so far as the emergencies of war may render their diversion therefrom a public necessity.

2. That the Board be urgently requested to provide in its shipbuilding program for meeting the demands for transportation in the future development of the commercial, financial and social intercourse between the United States and the other American countries.

As chairman of this section, Secretary McAdoo has issued a supplemental statement asking speedy action. He says: "On every occasion the official and commercial interests of Latin America have emphasized the urgent

necessity of better transportation facilities with the United States as a basis for closer commercial and financial relations. The United States Section of the International High Commission has ventured to make to the Shipping Board a number of suggestions, some general and some specific, relating to the further prosecution of its constructive plans, as well as to the disposition of ships now in its control during their further operation by the Board and otherwise. These suggestions include the immediate availability of ships for both the east and west coasts of South America and the careful planning of freight allocation so as to avoid empty cargo space on southbound trips. It will furthermore be necessary to develop a broad policy to meet the requirements of different industries and sections of both North and South America, in order that no undue hardship may be placed on any given industry or on any one section. Improvement of service for the West Indies and the avoidance of confusion and crowding of schedules by a careful adjustment of calling dates are also matters which have been submitted for the consideration of the Shipping Board. There is a strong desire on the part of every agency of this Government to contribute, within the measure of its power, toward giving to our Latin-American commerce the most adequate facilities."

O. F. S.

Regulations as to Exports Changed

WASHINGTON, Dec. 2.—The War Trade Board is revising the export conservation list and a radical loosening up of general export embargoes long in effect is in prospect.

"The changed situation arising out of the signing of the armistice," says an announcement by the Board, "makes it possible for the War Trade Board to alter many of its regulations governing the exportation of certain commodities, which the continuance of the war has heretofore made it necessary to conserve much more strictly than present circumstances require. The Board is now in a position to grant many export licenses which heretofore have been refused for reasons of conservation.

"There are now, and for some time to come there will be, certain commodities the exportation of which must be carefully controlled because of the general world shortage, but even for the exportation of these commodities licenses will be granted as freely as possible. The issuance of licenses will be greatly facilitated if exporters will state on their applications whether the licenses are required for business which is actually in hand, subject to export license, together with the date of their orders.

"In connection with the foregoing, exporters should be advised that, while it is no longer necessary to conserve commodities for war purposes, it may become necessary to regulate the exportation of certain commodities essential to the rehabilitation of Europe and Siberia; and exporters should be further advised that it may become necessary to place restrictions upon the exportation of bulky commodities by reason of the scarcity of tonnage available.

"The War Trade Board also calls the attention of exporters to the fact that the trading with the enemy act still remains in full force and effect."

The War Trade Board also announced that a special export license, effective Nov. 25, 1918, has been granted to the Post Office Department and to the Customs Service, authorizing the exportation, without individual export license, of samples of any commodity and advertising matter to be used therewith, regardless of whether the same are shipped by mail (subject, however, to the postal regulations), by express, or by freight, in passenger's baggage or otherwise, when destined to any country except Norway, Sweden, Denmark proper, Iceland, the Faroe Islands, European Holland, Switzerland and Greece. Under this license the term "samples" is construed to mean articles or portions thereof intended for use in soliciting orders, and is not construed to include any article or portion thereof which is itself intended to be sold as an article of commerce.

Interior Department Gets Potash Problem

WASHINGTON, Dec. 2.—The Chemicals Division of the War Industries Board has turned over to the Department of the Interior the problem of increasing the potash production of the United States. This action was taken by the direction of the President that an established branch of the Government may permanently set itself to the task of emancipating the American farmer from the grip of Germany's monopoly on the world's supply of fertilizer material.

Before the signing of the armistice, the War Industries Board had already attacked the problem. Chairman Baruch appeared before a Congressional Committee in behalf of an amendment to the revenue bill which would give encouragement to private industries who would undertake the risk of establishing potash production in this country. The Chemicals Division, in co-operation with other departments of the Government, had turned its attention to the specific task of extracting potash from waste products. A committee of experts, representing the steel and iron industry of the country and certain scientific departments of the Government, was in process of formation, under the auspices of the Chemicals Division, when hostilities ceased.

A statement by the War Industries Board says: "At a conference of experts recently held in the office of C. H. MacDowell, director of the Chemicals Division of the Board, the opinion prevailed that it would be entirely feasible to commercially develop a method of extracting the potash from blast-furnace fumes, particularly in regions where the blast furnaces are located near ores in which potash occurs in quantities sufficient to insure substantial recoveries. The problem presents many technical difficulties, since care must be taken in developing a by-product process not to interfere with the primary output."

Cincinnati Foundries Slack

Several foundries in Cincinnati that were closed down from Nov. 27 to Dec. 2 are now operating but with reduced forces. The demand for an increase in wages to \$7 for an eight-hour day, made by the union iron molders, has not been acted on by the employers, most of whom have very little work ahead and are laying off men almost daily.

The Shepard Electric Crane & Hoist Co., Montour Falls, N. Y., has opened a branch office in the Lexington Building, Baltimore. It is in charge of Norman P. Farrar, who was for a number of years district manager for the company in Philadelphia.

BRITISH DEMOBILIZATION

Munitions Work to Be Gradually Reduced, with Pay to the Unemployed

LONDON, Nov. 12.—Demobilization is very much in the air here, and arrangements to this end have been prepared none too soon. The Ministry of Munitions have just issued a notice to government contractors. This sets out that the great task before the country is the transformation of industry from war to peace. The government intends to recognize in these arrangements the good work which has been done by munition workers in helping to bring the war to a victorious conclusion. In order, however, that munition workers and their employers may at once be made aware of the government policy, the following instructions are issued to all factories and firms engaged on work for the Ministry of Munitions:

"1. There should, so far as possible, be no immediate general discharge of munition workers.

"2. All workers, however, who desire to withdraw from industry or to leave for any reason, and all workers who can be absorbed elsewhere, should be at once released.

"3. Production on contracts for guns and gun ammunition, machine guns, small arms, and small arms ammunition; trench warfare mortars, bombs and stores, pyrotechnic stores; aerial bombs; all accessories of the above stores; aircraft and aero-engines; and the manufacture of explosives, should be reduced in the following ways:

"(a) All overtime should be immediately abolished.

"(b) Systems of payment by results should be temporarily suspended, and the customary notice of the transfer from payment by results to time-work should be given.

"(c) When a transfer to time-work has taken place a reduction of the hourly week should, wherever possible, be introduced. The reduction of hours will also apply to men already on time-work, and in their case the customary procedure as to reduction of hours should be followed.

"(d) Whenever reduced hours are worked on a time-work basis, the number of hours worked must not be less than one-half of the hours in the present normal working week of the establishment. If in any case the earnings of the work people for the full weekly number of hours on the short-time system fall below the following amounts:

Men of 18 and over, 30s. per week.

Boys under 18, 15s. per week.

Women of 18 and over, 25s. per week.

Girls under 18, 12s. 6d. per week.

their earnings shall be made up to these sums by the employer, who will be reimbursed by the state. Where time is lost, the amounts payable will be sums proportionate to the number of hours actually worked.

"The adoption of half time may cause unavoidable discharges, but every effort should be made to minimize unemployment, utilizing employees for a short period on laboring and clearing up work. In allotting this work preference should be given to work people ordinarily dependent upon industrial employment.

"All persons discharged, or claiming release, can obtain free railroad warrants for journeys from the place of employment to their homes, or to places where they have found new employment. The warrants will be issued through the employment exchanges. In cases where large numbers are required warrants can be obtained by the employers from the employment exchanges for issue at the works."

To provide for the abnormal period that must im-

mediately follow on the cessation of hostilities, the government has adopted as a temporary measure a general scheme of non-contributory unemployment donation, which has been laid before them by the Minister of Reconstruction, in agreement with the Minister of Labor.

The broad conditions of the scheme are that this unemployment donation shall remain in force for a period of six months from a date to be announced shortly by the government, and that the benefit can be drawn for a maximum of 13 weeks during that period in cases where unemployment cannot be avoided. The other conditions and necessary safeguards will be explained by the Minister of Reconstruction in his statement to Parliament, and he will then also deal fully with the scheme that will be applicable to the demobilized members of His Majesty's forces.

Under this temporary non-contributory scheme, which will remain in force pending the introduction of a general contributory scheme, demobilized civil war workers will receive benefits on the following scale:

(a) To unemployed men over the age of 18 years, 24s. a week. To unemployed women over that age, 20s.

(b) There will be an additional allowance in respect of the first dependent child under 15 years of age, 6s. per week, and 3s. for each additional dependent child.

(c) There is a further provision for unemployed juveniles, between the ages of 15 and 18, of 12s. per week for boys and 10s. for girls, conditional on their attending a course of instruction approved by the Board of Education or other department concerned.

It is stated to be necessary that industry should be rapidly transformed to peace conditions in order to provide permanent and reproductive employment for the civil workers and for the fighting men returning from the war, and the proposals outlined above are solely intended to bridge over the inevitable period of dislocation.

Rolling of Shell Steel Nearly Ended

YOUNGSTOWN, OHIO, Dec. 2.—Rolling of shell and projectile steel has been reduced to a minimum in the district and is virtually at an end. Mill schedules have not been appreciably affected, sufficient "fill-in" orders having been received by practically all producers to maintain operations at an even keel. As a result, the supply of open-hearth steel for all finishing operations has been increased and for the first time in months sheet bars are in somewhat plentiful supply and regular customers are having little difficulty filling their requirements. While munition steel contracts have not yet been canceled, makers, it is understood, in most cases have reached an agreement with the Government to stop production. Officials of major corporations report enough business on hand to insure normal schedules for some time and expect no trouble in getting additional orders to tide them over the reconstruction period.

During the week an inquiry was received by cable from the British Government by a Valley producer for 30,000 tons of skelp for immediate delivery. The local maker was unable to fill it. A heavy buying movement is expected from French and Italian governments shortly from tone of inquiries. Italy is now placing substantial orders for soft Bessemer steel bars, with more coming.

Domestic and foreign inquiry for sheets, particularly black and galvanized, continues heavy. An order recently placed calls for 700 tons of black sheet for France, to be used in rehabilitation. South America is in the market for large tonnages through brokers.

Fabricating plants have been most seriously affected by cancellations, particularly those working on ordnance orders. There is much speculation as to the probable needs of France and Italy for steel products of all kinds. The Petroleum Iron Works Co. has received cancellation of a Government contract calling for 12,000 drum heads for gasoline containers.

LORRAINE IRON MINES INTACT

Blast Furnace Plants Dismantled or Destroyed by Germans

LONDON, Dec. 2 (*By Cable*).—Definite information concerning the condition of iron and steel plants in the districts evacuated by the German army under the armistice is lacking. Those in German Lorraine are presumably in fair order but the Homecourt and Pont a Mousson in French Lorraine were dismantled or destroyed. As was chronicled many months ago, the Cockerill works at Seraing, Belgium, were to a considerable extent dismantled and equipment was also taken away by the Germans from other Belgian plants. The last steel plant running apparently was that at Providence but there has been no late news on this point.

The French Minister of Armament, who has been conferring at Briey with iron mine and furnace owners, announces that the mines are practically intact but that the furnace plants were destroyed methodically by the Germans.

No information is available as to German iron and steel production in Belgium and the occupied portion of France during the war, nor as to the output of works of which the French retained control. Pig iron production in German Lorraine in 1913 was 3,551,000 tons; in French Lorraine, 2,779,000 tons and in Luxembourg, 2,881,000 tons. No later figures have been published. It is considered improbable that Luxembourg will remain under German control.

A French Steel Master's Message Tells of Vandalism

President E. A. S. Clarke of the Lackawanna Steel Co., New York, sent a cable on Nov. 12 to Theodore Laurent, managing director of the Compagnie des Forges & Acieries de la Marine & d'Homecourt, congratulating him on the outcome of the war and expressing appreciation of the great part his company had had in it. Director Laurent's company next to the Creusot works has been the chief factor in providing ordnance and munitions for the French army, and its plant at St. Chamond in southern France provided also the big guns for which the French navy has been conspicuous. The Homecourt plant, however, fell into the hands of the Germans early in the war. In response to Mr. Clarke's expressions, Mr. Laurent sent the following cablegram on Nov. 29, which will be read in this country with peculiar interest:

"I thank you for your cordial cable. I thank you and also all your staff, and through them your whole country for your faithful friendship and for the powerful aid which you have given us. All our sacrifices are repaid by the results which have been obtained. I found your cable upon returning from our mills at Homecourt which I entered some hours before the American troops, who are occupying that region at the present time. I found our mills systematically devastated and pillaged by the German industrials, who had subjected the personnel remaining on the ground to the most severe humiliations. It is necessary that all this be known and made public, and especially that German industry and in particular the German metallurgical industry be put under the ban of civilization. Accept all best wishes and friendship."

At the plant of the Steel Co. of Canada, East Hamilton, Ont., the initial operation of the first battery of coke ovens took place last week. The second battery is expected to be put in operation some time this month. When all the ovens are in operation the output will amount to 720 tons of coke per day.

Canadian War Workers Are Finding Other Places

TORONTO, Nov. 30.—Essential materials will be much in demand for a long time, and the lumber and iron and steel industries are assured of activity. In this period of adjustment when establishments that were extensively engaged in war work are adapting themselves gradually to the changed conditions, other manufacturers who are more fortunately situated for the time being are able to absorb much of the labor that has been released from work on war materials. The transfer of such labor has already been accomplished to a considerable degree, and will be accentuated in the coming weeks.

Robert Hobson, president Steel Co. of Canada, Hamilton, estimates that his company would increase its force 10 per cent. This has already begun, and has had an important effect. A gain of 25 per cent in the efficiency of labor is his estimate. Outside workers have been especially scarce, however, and this class of labor is urgently needed. Indications point to an extensive emigration of foreigners, which will take a considerable amount of unskilled labor off the Canadian market.

The problem of finding employment for labor will not be a critical one, in the opinion of Mr. Hobson, as the development of an extensive export business in connection with reconstruction will speed the wheels of industry for some time. Also, the need for steel rails and other railroad supplies for all the lines of the country has resulted in the placing of large orders already, which will be speedily followed by others. Accessories are being ordered in volume, and work on these will need attention almost immediately.

Shipbuilding is one of the fields that can be depended upon to absorb a considerable portion of the labor that is being released from strictly war business. While this industry received its impetus as a result of conditions brought about by the war, Canadian shipbuilders foresee great activity for several years, and they are confident that it will retain permanently a large place in the Canadian industrial system. Col. John B. Miller, Polson Iron Works, states that between 1700 and 1800 men are now employed at that plant, and that if sufficient labor is available to start night shifts, 1000 more could be used. At a Toronto shipyard, where about 850 men were employed before Nov. 11, there are now 1100 on the payroll. L. Dahlgren, vice-president and general manager of the Dominion Shipbuilding Co., states that Canadian shipyard labor is proving fairly efficient, and the first season of the company's operations has been attended by quite good results, with four improved Cunard type freighters launched prior to last week, when the fifth vessel took the water. Several trawlers as well were launched during the year. The vessels already built have been of 4300 tons deadweight. The construction of six other vessels of 3550 tons deadweight is being proceeded with. Early next year, work will be started on six additional vessels and the management hopes to turn out 10 to 12 vessels a year.

Locomotive Works Cut Down Time

Announcement was made Dec. 1 by John A. MacGarvey, general manager of the American Locomotive Co. at Schenectady, N. Y., that the plant would go on a five day per week working basis and continue on that basis for an indefinite time. It was explained that the Government orders for locomotives are coming in so slowly that it is impossible to keep the plant in full operation. During the month of November only four engines were turned out each day.

The War Trade Board, Ottawa, Canada, announces the cancellation of its resolution of Oct. 9, prohibiting the use of steel plates, shapes, bars or any other form of steel, the value of which exceeds \$2,000, in the erection of any building or structure of any kind, form or description. It is therefore no longer necessary for Canadian manufacturers or dealers in steel, or parties requiring the steel, to obtain a permit from the Board to use steel in the erection of buildings.

MECHANICAL ENGINEERS MEET

American Society of Mechanical Engineers Holding Its Annual Meeting

On Monday, Dec. 2, the Committee on Aims and Organization, having representatives from the various sections, met in the United Engineering Building, New York, to put into preliminary shape the proposed plans for developing the work of the Society. On Tuesday the same committee continued its consideration of the matter and a sub-committee undertook the writing of resolutions.

On Tuesday evening, at the opening session of the Society's deliberations, President Charles T. Main delivered his address and the report of the tellers of election announced the new officers as follows:

President: Dean Mortimer E. Cooley, Ann Arbor, Mich.

Vice-Presidents: F. R. Low, New York; Henry B. Sargent, New Haven, Conn., and John A. Stevens, Lowell, Mass.

Managers: Charles L. Newcomb, Holyoke, Mass.; F. O. Wells, Greenfield, Mass., and Dean C. R. Richards, Urbana, Ill.

Treasurer: William H. Wiley, New York.

Honorary membership was conferred upon Charles M. Schwab and Orville Wright.

On Wednesday morning a business session of the Society's own activities was followed by an address, "A Message from the Legal Profession," by Dr. George W. Kirchway, formerly dean of the Columbia Law School. In the afternoon there was a machine shop session mainly devoted to standards of screw threads, limit gage, larger taper shanks and sockets. Simultaneously there was a joint session with the American Society of Refrigerating Engineers.

In the evening Lieut.-Commander William L. Cathcart lectured on "The Achievements of Naval Engineering in the War," and Lieut.-Commander D. C. Buell showed motion pictures of the 50-caliber 14-in. railway-mounted gun.

The Thursday morning session will be devoted to the "Engineering of Man Power," which is to be continued during the afternoon with an accompanying Textile session and one on the "Weights and Measures of Latin America," with a paper on "Efficiency and Democracy in Industry" by H. L. Gantt, presented on another page of this issue.

On Thursday evening a lecture on "Railway Artillery" will be given by Col. James B. Dillard.

On Friday there will be a Power Plant symposium and a general session.

During the week excursions were arranged to the Hispanic Society, the Brooklyn Navy Yard, the plant of the Seaboard By-products Coke Co., Kearney, N. J., the concrete steamship Faith of the San Francisco Shipbuilding Co., and to the plant of the Steel Utilities Co., Newark, N. J., where there is an automatic spacing machine for structural fabrication.

Loving Cup Presented to Director of Steel Supply Replogle

WASHINGTON, Dec. 3.—As a token of their esteem, the 28 members of the Steel Section of the War Industries Board presented a silver loving cup to J. Leonard Replogle, chief of the section, at a dinner at which he was the host at his home. The dinner was a farewell affair and the presentation of the cup came as a surprise to Mr. Replogle. The presentation speech was made by Jay C. McLaughlan, chief of the Pig Iron Section.

In a letter written to each member of his staff announcing the demobilization of the section, Mr. Replogle wrote: "I desire to express to you my sincerest appreciation at your untiring devotion to the great work in which we have engaged and which has come to a successful conclusion. You have played your part in the great war and this will be a great satisfaction to you in future years."

MESABA CONCENTRATES

First Cargo of Low Phosphorus Sinter from the Jackling Plant at Duluth

A trial cargo of 1,800 tons of low phosphorus sinter has been shipped from Duluth and the ore will be delivered at the Midvale Steel & Ordnance Co.'s blast furnaces at Coatesville, Pa. The sinter was produced at the mill at Duluth equipped some time ago by the Jackling interests for the concentration of magnetic ore from the eastern Mesaba range. D. C. Jackling is the managing director of the enterprise, which is expected to develop to a very considerable production of low phosphorus sinter from eastern Mesaba ores. The concentrating operations have been carried on in an experimental way for several years, and have been in charge of W. G. Swart. The possibilities of these lean magnetites were brought to the attention of the Jackling-Hayden, Stone & Co. interests several years ago by Dwight E. Woodbridge, who secured the lands now held by the operating syndicate.

The cargo analyses of the shipment just made to Coatesville, Pa., ran 63 per cent iron and 0.008 phosphorus. The cargo thus represents the highest grade ore that has gone from Lake Superior in many years.

The wet magnetic concentrating process is followed at Duluth in a mill which has a capacity of about 100 tons a day. It involves fine grinding for the removal of a large part of the silica and phosphorus, the latter existing as apatite.

Federal Trade Commission's Recommendation as to Resale Prices

WASHINGTON, Dec. 3.—The Federal Trade Commission to-day recommended to Congress the passage of a law that will permit a manufacturer to maintain a fixed price for his product. So far, the commission has ruled adversely on all such efforts of manufacturers, but it declared that in doing so it merely follows the decree of the United States Supreme Court. Its report now declares that unrestrained price cutting tends to impair, if not to destroy, the production and distribution of articles desirable to the public. It insists that the producers of identified goods should be protected in their intangible property rights or good will, but that the unlimited power both to fix and to enforce and maintain a resale price may not be made lawful with safety, although unrestrained price cutting is not in the public interest. It recommends that it be provided by law "if the manufacturer of an article produced and sold under competitive conditions desires to fix and maintain resale prices, he shall file with an agency, designated by the Congress, a description of such article, the contract of sale and the price schedule which he wishes to maintain and that the agency designated by the Congress be charged with the duty, either upon its own initiative or upon complaint of any dealer or consumer or other parties in interest, to review such prices and that any data and information for a new combination or a determination be made available to such agency."

Horace W. Davis was appointed receiver in equity of the Barnum Richardson Co. on Nov. 13. The statement is made that the company is solvent and will continue to operate and that an explanation of the situation will be given out shortly by the receiver. The Barnum Richardson Co. is a well-known manufacturer of charcoal pig iron at Lime Rock, Conn. The company was incorporated in 1864 and the business was established in 1734.

George P. Bard, president of the Petroleum Iron Works Co., which sustained a heavy loss by fire Friday evening, Nov. 29, when the plant of its subsidiary, the Pennsylvania Tank Car Co., was badly damaged, announces that it will be rebuilt at once. Loss was fixed at \$200,000. Origin of the blaze is unknown. The paint shop, forging shop and fabricating buildings were burned. The plant is located at Masury, Pa., near Sharon.

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Exports and Domestic Steel

There has been so much loose talk about the American steel trade depending largely upon export markets after the war, on account of its enlarged capacity, that even the tentative plans of the Independent Steel Products Corporation, now in process of formation, throw definite light upon the prospects as viewed by important steel interests. This company will practically represent "the independents" in the steel trade, and its general program seems to be to set aside about 10 per cent of the production for export purposes. The Steel Corporation's exports at times have run from 15 to 20 per cent of its production and its plans for the future look to an export trade on about that scale.

It can be seen, therefore, that the ideas of the steel trade fall quite short of the conception in some quarters that the growth of American steel making capacity in the past three years represents a surplus tonnage that must be exported, in addition to such tonnages as were being exported before the war. The output of finished rolled steel in both 1912 and 1913 was a trifle more than 23,000,000 gross tons, representing approximately 90 per cent of the capacity existing at the close of 1913, or just before the war. The steel exports averaged about 2,300,000 tons in the two years. The present productive capacity is about 36,000,000 tons. For exports to increase so as to cover the increased capacity that has come during the war they would now have to amount to about 15,000,000 tons a year, or over 40 per cent of the output, if output is at capacity. As a matter of fact, in setting 10 per cent for export as a tentative proportion, the independent steel producers have taken the pre-war proportion of the industry as closely as it can possibly be figured from the available statistics. On that basis there is no prospect of any very fierce competition in international steel markets. The British policy seems to be rather clearly defined, of seeking decidedly profitable prices on export steel, the British Government having lately set export prices far above the domestic level. As reported in last week's cable to THE IRON AGE the export price on ship, bridge and tank plate is £16 10s. per gross ton, which is equal to about 3.60c per pound,

while the control price at home is £11 10s. or about 2.50c.

There never was any good ground for assuming that after the war the export market would be in better position than the domestic market to absorb an increased tonnage of steel. Before the war the export business of all the steel producing countries was not much more than one-half the consumption in the United States. If neutrals have been starved in the matter of steel during the war, consumers in the United States have at least been denied a great deal of steel they would have been glad to get. The ability to pay is certainly a factor and that ability certainly exists in the United States to a greater extent than it does in the rest of the world as a whole.

The American market has always shown a disposition to expand, apparently merely by the lapse of time. Between the industrial depression of 1893-7 and the beginning of the war in 1914 there were five periods of heavy demand, with periods of light demand between. Thus there have been five periods of light demand since the boom of 1899. In each one of those periods buyers refrained, entirely of their own volition, from buying heavily, and yet afterward, when their mood changed, they bought with avidity and were encouraged rather than discouraged by moderate price advances. The recent abstention from buying has not been voluntary, however. The consumers were not permitted to have the material, because it was needed for war purposes. One should expect the buying to be all the heavier, merely from that circumstance, while the increase in capacity in five years is only about 40 per cent.

Give the Soldier a Trade

The suggestion is made by Educational Director C. R. Dooley, of the War Department's Committee on Vocational Instruction, that the returning soldiers be given trade training before demobilization. He submits it in his paper on "Intensive Training" at this week's meeting of the American Society of Mechanical Engineers. It is very doubtful, however, if so excellent a proposal can be put through. Time is scant for those in authority to turn round on the plan. There will also be the natural desire of the men themselves

to get away from army restraint and to take up again home duties and personal freedom.

But what a difference it would make if all these fine fellows, of splendid health and seasoned to inflame or obey were put through the same sort of training that Mr. Dooley found capable of making over the least promising of material into workmen and at surprising speed.

Something of this sort is planned by Dr. F. E. Spaulding, head of the Cleveland Schools, who is now in France and it may be carried out at leisure with the army of occupation. But how desirable it is that the soldiers now to be dispersed into civilian walks should be able to take up actively a trade and to acquire this skill along with the discipline and high aims of American Army life. Perhaps it is not too late for Government action in this direction that would benefit at least a part of the returning army.

Contracts and Contract Periods

Sentiment among steel manufacturers points to the conclusion that the day of long-term contracts that are practically options has gone and will not return. When manufacturing consumers of steel and jobbers come into the market again prepared to buy for a considerable period ahead, they are likely to find a majority of the steel makers unwilling to make anything but firm contracts and for short periods, probably 90 days.

In 1916 and 1917, when the market was steadily advancing, nearly all the steel companies made heavy deliveries of steel products at prices which were considerably below those current at the time of shipment. Consumers and jobbers who had open contracts with the steel companies profited greatly throughout this period. It is well known that many jobbers made tremendous profits by reselling steel at a great advance over the prices at which the material was billed to them.

The long-term contract is now held to be unnecessary, even in the case of the agricultural machinery trade, which formerly insisted upon yearly contracts, but which in the past two or three years has been forced, in some instances, to accept six months' contracts. Probably an exception will continue to be made of the agricultural trade and some others similarly situated, but the rank and file of steel buyers are likely to find little disposition henceforth on the part of the steel companies to sell ahead more than three months.

The steel trade generally is taking considerable interest in the form of contract which has been in vogue for the past year and a half between sheet mills and their customers. This is a non-cancellable contract and under present conditions it is having its first real test. Sheet manufacturers declare that they will permit none of their commercial contracts to be canceled, even where the consumer is quitting war work to resume normal activities. In such instances the sheet companies will permit the substitution of an equal tonnage of material which can be utilized in the consumer's regular line of work.

The attitude of jobbers on the option-form of contract was expressed in a resolution adopted

by the American Iron, Steel and Heavy Hardware Association at its convention at Atlantic City, N. J., last May. This association went on record as approving the ironclad form of contract used by the sheet manufacturers, and strong favor was shown for extending the practice to other steel products.

The ending of the war has brought up the issue of contract enforcement in many forms. Steel companies which have orders remaining on their books at prices lower than those now in effect have been asked by some consumers to make deliveries on these old orders. In the case of high priced contracts, on which shipments have not been made in full because Government priorities intervened, some differences of opinion have arisen and in not a few instances consumers have contended that the prices in these contracts should be adjusted to the present basis, or that some kind of a compromise should be effected. One manufacturer of plates has recently made an issue of this question, by taking into court a number of actions against customers who have refused to accept shipments on plates contracted for at about 8 to 10 cents. In the minds of some steel manufacturers there seems to be no question of their legal right to enforce acceptance of material bought at such high prices, but a majority of them would probably hesitate to make an issue of the matter, in view of the extraordinary interference of war work with all contract engagements.

The statement of the United States Steel Corporation on unfilled orders is likely to show a reduction in the amount on hand, and this will not merely reflect Government cancellations, but will also indicate that the subsidiaries have wiped out many of the fictitious tonnages on their books.

The Merchant Marine

That the United States has a great many ships flying its flag and will build many more is established. It has been made clear that the termination of hostilities does not materially alter the shipbuilding program, now involving 25,000,000 tons deadweight, which nearly approaches one-third of the world's merchant tonnage at the beginning of the war.

The question is frequently raised whether these ships built in the United States will continue indefinitely to fly the American flag. It is rather improbable that they will do so if the United States does not itself have the foreign commerce to keep them busy. It is quite certain they will not do so if the shipping laws of the various maritime countries, governing operations under their flags, place the American flag at a disadvantage. There has been seasonable criticism of our navigation laws which, according to the showing of actual results, did not foster the growth of an American merchant marine in competition with other countries. Possibly there were some other reasons, but the bald fact is a difficult one to explain away.

Chairman Hurley of the Shipping Board, whose many and plain public utterances in recent months have made quite clear his expectation that by this means or that there will be a great American merchant marine in the future, has taken a new view of this subject of the relation between the Ameri-

can navigation laws and those of other countries. Instead of demanding at this time a revision of our navigation laws, he announces that on his present trip abroad he will seek an international understanding looking to the adoption of American standards by the other countries. Mr. Hurley has undertaken a difficult mission and the American shipping trade will have doubts of his success. As with the railroads, Government fixing of vessel labor cost carries with it Government responsibility for a proper return to capital, and foreign ship owners are not likely to relieve our Government of its dilemma.

The United States is regarded as a land of opportunities, and Americans are held to be quick to seize opportunities. Great opportunities are promised to intelligent Americans if conditions are made such that they, rather than the riff-raff so much employed under some flags, man the American merchant marine. The country needs education as to foreign trade opportunities, and if real Americans sail the seas that education will be promoted. The navigation laws are, directly or indirectly, responsible very largely not only for the character of the men who ship as common seamen, but also in important measure for the character of men who seek employment as officers of various ranks. For intelligent and profitable foreign trade the country needs the closest contact with foreign markets that can be attained, and the better the class of men who sail our vessels the broader and better that contact will be.

Time will develop, what common opinion thus far seems so largely to have missed, that foreign trade for the United States will mean import business as much as export business. It is not a matter of choice, but a matter of conditions. Our position as to the unseen trade balance which the visible balance must equalize, has been greatly changed. For many years the condition was that our visible trade balance, in merchandise, gold and silver, had to be very largely in our favor, to offset the net of the invisible balance, which was against us. Prior to about July 1, 1897, our merchandise trade balance was relatively small, but from that date to the beginning of the war, 17 years, our merchandise trade balance averaged almost precisely \$500,000,000 a year, and there was no marked increasing or decreasing tendency during the period. Nevertheless we got into debt, rather than otherwise, for it has since been found that at the beginning of the war we owed abroad a net amount of about \$3,000,000,000. The war has changed the balance to about \$7,000,000,000 on the other side of the account.

Roughly speaking, it might be said, then, that with other things unchanged our merchandise balance might be changed by an amount equal to 5 per cent on \$10,000,000,000, which would be just the amount of the merchandise balance we formerly had in our favor. We could increase our imports by that amount, plus any amount by which we increased our exports. Something must always be occurring to equalize, for there is always a close settlement, in merchandise, gold or securities. Conditions will undoubtedly dictate that we accept more merchandise. An American merchant marine, manned by intelligent Americans, will aid us in

choosing the things that it will be most beneficial for us to import.

Sound Steel by Compression

Sound steel with a reduction in the necessary crop of the ingot has been and still is the desideratum of steel makers. When one considers the study that has been devoted to this subject and the years in which quantities of steel have been virtually wasted, it is a matter of wonder that the waste has been allowed to go on so long.

A very interesting development of this study is the recent publication before the Iron and Steel Institute of the further work of the well-known British steelmaker, Benjamin Talbot. It was abstracted in *THE IRON AGE*, Oct. 3, 1918. Mr. Talbot supplements the use of a sink head, now recognized as essential, with a device for the lateral compression of the upper 15 per cent of the ingot. On an average of 100 pressed ingots, 95.5 per cent of sound steel was obtained. Mr. Talbot's improved press seems from his own experience to be commercially applicable to large steel mills, particularly those rolling shells or rails, and ten five-ton ingots can be squeezed in less than half an hour.

Mr. Talbot's original presentation of this subject appeared in 1912 and was reviewed in *THE IRON AGE* of Oct. 17 and Nov. 12, 1912. Aluminum was then recommended as a deoxidizer followed by lateral compression. In his latest paper Mr. Talbot testifies that the fault of the earlier attempts consisted in the formation of a definite line of higher carbon, sulphur and phosphorus bounding the purer center, this line appearing later in the finished rails. This was found objectionable by other investigators both in this country and in Great Britain.

As a result of further experimentation the author now announces that, by the use of the sink head or hot top and subsequent lateral compression, the segregate is more regularly diffused and the line is not found. A somewhat softer center is formed, the carbon being about 10 per cent lower, with sulphur and phosphorus also lower. The anticipation of Mr. Talbot is that not only a better rail with a slightly softer center can be obtained but also sound commercial steel to within 3 or 4 per cent from the top of the ingot, so that the entire ingot, less the necessary cropping, can be used satisfactorily.

The conclusion seems warranted that a larger percentage of sounder steel can be secured if the top portion of the ingot is compressed before its center is entirely solid than is the case with the usual methods of refractory tops alone. The adoption of the process depends largely on economic considerations. Conditions after the war may demand increased yields and decreased use of raw materials.

For many years hot tops alone on ingot molds were little used, but the necessities of war have made their adoption more general, particularly in this country. It is probable that the work of the National Research Council, through its steel ingot committee, will furnish valuable suggestions and assist in the standardization of steel practice.

Export and Import Statistics to Be Reclassified

A comprehensive reclassification of our statistics of import and export commodities is being worked out by the Bureau of Foreign and Domestic Commerce in co-operation with the customs service, the Shipping Board, the War Trade Board, the Tariff Commission, and other Governmental agents for submittal to the Secretary of Commerce and the Secretary of the Treasury. The objects in view are to give a more logical arrangement to our trade statistics, to facilitate both the tabulation and the utilization of these statistics, to increase the comparability of import and export figures by having a common classification for both, and to give greater detail.

The new classification will be on a decimal basis. All commodities are divided into 10 main groups. Each of these groups is in turn subdivided. For the purpose of export statistics the subdivision will be carried to four places. For imports the classification will be carried to five figures. The more detailed classification of imports is required in order to make it possible to use the classification for the details required by the tariff act, and further to meet the wishes of the commercial interests of the country. In both exports and imports the new scheme will give a much greater detail than is found in the present classification.

While this new method departs widely from the one now in use, it will not destroy the possibility of comparing future trade statistics with the past. The main groupings, and their index numbers, as well as the subdivision for the metal industries follow:

- 0 Vegetable products used principally for foods and beverages.
- 1 Animals and animal products (except fibers).
- 2 Fibers and textile products.
- 3 Wood, wood products, and paper.
- 4 Plant products, other than foods, fibers, and woods.
- 5 Chemical and chemical products.
- 6 Ores, metals, and metal manufactures.
 - 60 Iron and steel.
 - 61 Manganese, chromium, vanadium, tungsten, molybdenum, etc.
 - 62 Nickel and cobalt.
 - 63 Aluminum, tin, and antimony.
 - 64 Lead and zinc.
 - 65 Copper, brass, and bronze.
 - 66 Precious metals, and manufactures of.
 - 67 Mercury.
 - 68
 - 69 All other ores, metals, alloys, and manufactures.
- 7 Machinery, tools and vehicles.
 - 70 Farm equipment.
 - 71 Metal-working machinery.
 - 72 Electrical machinery and electrical apparatus.
 - 73 Engines and parts.
 - 74 Mining, excavating, and road machinery.
 - 75 Textile machinery.
 - 76 Factory and other industrial machinery.
 - 77 Other machinery.
 - 78 Vehicles.
 - 79 Tools, cutlery, and miscellaneous hardware.
- 8 Non-metallic minerals and products.
- 9 Miscellaneous.

The new classification is to go into effect Jan. 1, 1919. Suggestions for modifications are invited and should be sent to G. B. Roorbach, room 1023 Munsey Building, Washington, D. C. Mr. Roorbach is chairman of the committee in charge of making the new classification.

The Driggs-Seabury Ordnance Co., now the Savage Arms Corporation, has called for redemption at the office of the Franklin Trust Co., 46 Wall Street, New York, all first mortgage six per cent gold bonds now outstanding, except those maturing Dec. 31, 1918, at 101 per cent of the principal, with interest.

The firm of J. Aron & Co., Inc., New York, which has for the past 18 years maintained branch offices for export and import in Chicago and New Orleans, has established a Pacific Coast office in the Merchants' Exchange Building, San Francisco, with a steel department.

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Core-Making by Blind Soldiers

In the course of a few days a delegation of Government officials, accompanied by Major Frank B. Gilbreth, are expected at Chicago to confer with representatives of the National Founders' Association relative to the employment in foundries of men who return blind from the war. An experiment made with a blind man at Baltimore inspires hope that success may be attained in teaching the blind how to make cores, although it is believed that some special devices may have to be perfected before sightless men can reach a production basis. Among others, A. B. Segur, industrial engineer, Conway Building, Chicago, of the Red Cross Institute for the Blind is interested in the work. Officials of the National Founders' Association believe that the project will be successful, although some foundrymen are skeptical. Several Chicago foundries, will be visited in the course of the investigation.

The Bay State Iron Works, Erie, Pa., is being reorganized as the Bay State Iron Works Corporation with a capital, paid in, of \$100,000. The officers are: President and manager, E. L. Burch; vice-president, R. L. Burch, both of Erie; treasurer, P. R. Moses, of Pope & Trainer, engineers, 356 Fifth Ave., New York, and secretary, E. D. Austin. The main office is at Erie and the New York office at 356 Fifth Ave. The company has built an addition to its plant and has installed additional machinery. Its business is the manufacture of triple expansion marine engines of 1000 hp. for United States Government tug boats being built by M. M. Davison Son, Inc., of Solomons, Md. and 356 Fifth Ave., New York. At present, the company is not in the market for additional equipment.

PIG IRON OUTPUT FALLS OFF

November Daily Yield 680 Tons Less

Total of 3,354,074 Gross Tons a Record for Month of November—Loss of Six Stacks

The output of pig iron in November was 3,354,074 gross tons or 111,802 tons a day as compared with 3,486,941 gross tons or 112,482 tons a day in October. The net loss of 680 tons a day is due to a considerable extent to banking and blowing out stacks on account of coke shortage. On Dec. 1 there were 360 furnaces in blast as against 366 on Nov. 1, five having been blown in and 11 blown out during the month. The estimated daily capacity in blast Dec. 1 is 111,330 gross tons as compared with 113,500 tons estimated Nov. 1. The production of ferroalloys amounted to 59,638 gross tons for November, of which 33,545 tons was ferromanganese and 26,093 tons was spiegeleisen.

Output by Districts

The accompanying table gives the production of all coke and anthracite furnaces in November and the three months preceding:

Monthly Pig-Iron Production—Gross Tons

	Aug. (31 days)	Sept. (30 days)	Oct. (31 days)	Nov. (30 days)
New York	219,040	222,506	231,286	222,253
New Jersey	17,049	19,017	14,466	20,560
Lehigh Valley	114,397	133,550	128,897	119,846
Schuylkill Valley	91,296	85,873	75,959	87,336
Lower Susquehanna and Lebanon Valleys	87,118	92,582	94,350	87,884
Pittsburgh district	687,433	699,802	702,690	662,644
Shenango Valley	177,204	174,063	181,094	173,784
Western Pennsylvania	182,315	185,508	184,888	178,440
Maryland, Virginia and Kentucky	90,423	99,035	91,899	87,667
Wheeling district	140,154	136,216	142,059	126,602
Mahoning Valley	292,759	310,404	337,165	320,295
Central and Northern Ohio	301,665	292,521	295,409	297,027
Southern Ohio	69,633	68,153	75,661	61,064
Chicago district	556,985	529,824	560,839	551,651
Mich., Minn., Mo., Wis., Col. and Wash.	112,473	124,659	128,091	120,100
Alabama	221,997	215,882	215,631	206,368
Tennessee and Ga.	27,644	28,675	26,557	30,555
Total	3,389,585	3,418,270	3,486,941	3,354,074

Daily Rate of Production

The daily rate of production of coke and anthracite pig iron by months, from November, 1917, is as follows:

Daily Rate of Pig-Iron Production by Months—Gross Tons

	Steel Works	Merchant	Total
November, 1917	77,135	29,724	106,859
December	66,605	26,392	92,997
January, 1918	55,662	22,137	77,799
February	56,938	25,897	82,835
March	74,526	29,122	103,648
April	79,199	30,408	109,607
May	81,238	29,937	111,175
June	81,734	29,059	110,793
July	79,248	31,106	110,354
August	80,947	28,394	109,341
September	83,579	30,363	113,942
October	83,686	28,796	112,482
November	83,395	28,407	111,802

The furnaces blown in include "A" stack of the Bethlehem Steel Co. in the Lower Susquehanna Valley, Lawrence in Southern Ohio, No. 2 Ensley and Talladega in Alabama, and one Rockwood in Tennessee.

Among the furnaces blown out are Buffalo "A" stack in the Buffalo district, No. 2 Steelton in the Lower Susquehanna Valley, one Duquesne and one Edgar Thomson in the Pittsburgh district, Newcastle No. 1 and No. 3 Farrel in the Shenango Valley, one Grand Rivers in Kentucky, one Mingo in the Wheeling district, one Wellston in Southern Ohio, Zenith in Minnesota, and Woodstock in Alabama.

Production of Steel Companies

Returns from all furnaces of the United States Steel Corporation and the various independent steel companies show the following totals of steelmaking iron month by month, together with ferromanganese and spiegeleisen. These last, while stated separately, are also included in the columns of "total production."

Production of Steel Companies—Gross Tons

	Total production			Spiegeleisen and ferromanganese		
	1916	1917	1918	1916	1917	1918
Jan.	2,251,035	2,244,203	1,756,208	24,866	38,792	30,695
Feb.	2,183,845	1,829,846	1,620,254	23,877	32,187	26,114
Mar.	2,365,116	2,285,430	2,349,419	29,388	36,563	39,122
Apr.	2,316,768	2,370,937	2,411,488	31,862	39,595	36,511
May	2,408,890	2,404,380	2,513,577	35,844	37,791	34,633
June	2,295,784	2,304,155	2,407,166	38,597	30,829	44,844
July	2,306,303	2,369,630	2,456,693	31,353	43,884	51,762
Aug.	2,313,122	2,214,513	2,509,357	33,338	39,492	54,009
Sept.	2,309,710	2,198,705	2,507,381	29,451	42,237	66,275
Oct.	2,530,806	2,376,589	2,594,277	34,566	48,691	70,379
Nov.	2,404,210	2,349,545	2,501,867	44,975	34,688	59,838
Dec.	2,294,620	2,094,659	.....	43,470	29,902	.....

Capacity in Blast December 1

The following table shows the number of furnaces in blast Dec. 1 in the different districts, also the number and daily capacity in gross tons of furnaces in blast Nov. 1:

Coke and Anthracite Furnaces in Blast

Location of furnaces	Total Number of stacks	Dec. 1		Nov. 1	
		Number in blast	Capacity per day	Number in blast	Capacity per day
New York:					
Buffalo	21	19	6,770	21	6,810
Ferro	1	1	95	0	0
Other N. Y.	3	3	540	3	575
Ferro	1	1	105	1	90
New Jersey:					
Ferro	4	4	650	4	550
Ferro	1	1	40	1	45
Pennsylvania:					
Lehigh Valley	18	16	3,915	16	4,000
Spiegel	2	2	180	2	200
Schuylkill Val.	13	10	2,975	10	2,855
Spiegel	2	1	65	1	80
Lower Susquehanna:					
Ferro	9	6	1,885	6	1,800
Ferro and Spiegel ...	4	3	275	2	150
Pittsburgh Dist.:					
Ferro	52	47	21,050	49	21,954
Spiegel	5	4	675	4	800
Shenango Valley:					
Ferro	19	17	5,300	19	5,845
Western Pa.:					
Ferro and Spiegel ...	25	22	5,885	21	6,040
Maryland:					
Wheeling District	14	13	4,140	14	4,580
Ohio:					
Mahoning Val.	27	26	10,875	26	10,875
Central and Northern:					
Northern	26	25	9,900	25	10,000
Southern	17	14	2,085	14	2,100
Illinois and Ind.:					
Ferro	40	38	18,310	38	18,100
Ferro	1	1	80	1	70
Mich., Wis. and Minn.					
Col. Mo. and Wash.	13	9	2,600	10	2,700
Ferro	7	5	1,165	5	1,370
Ferro	1	1	110	1	110
The South:					
Virginia	15	11	1,125	9	1,100
Ferro and Spiegel ...	4	2	80	4	115
Kentucky	7	4	680	5	670
Alabama	45	30	6,875	30	6,920
Ferro	1	2	105	1	30
Tenn. and Ga.	16	11	1,945	10	860
Total	429	360	111,330	366	113,500

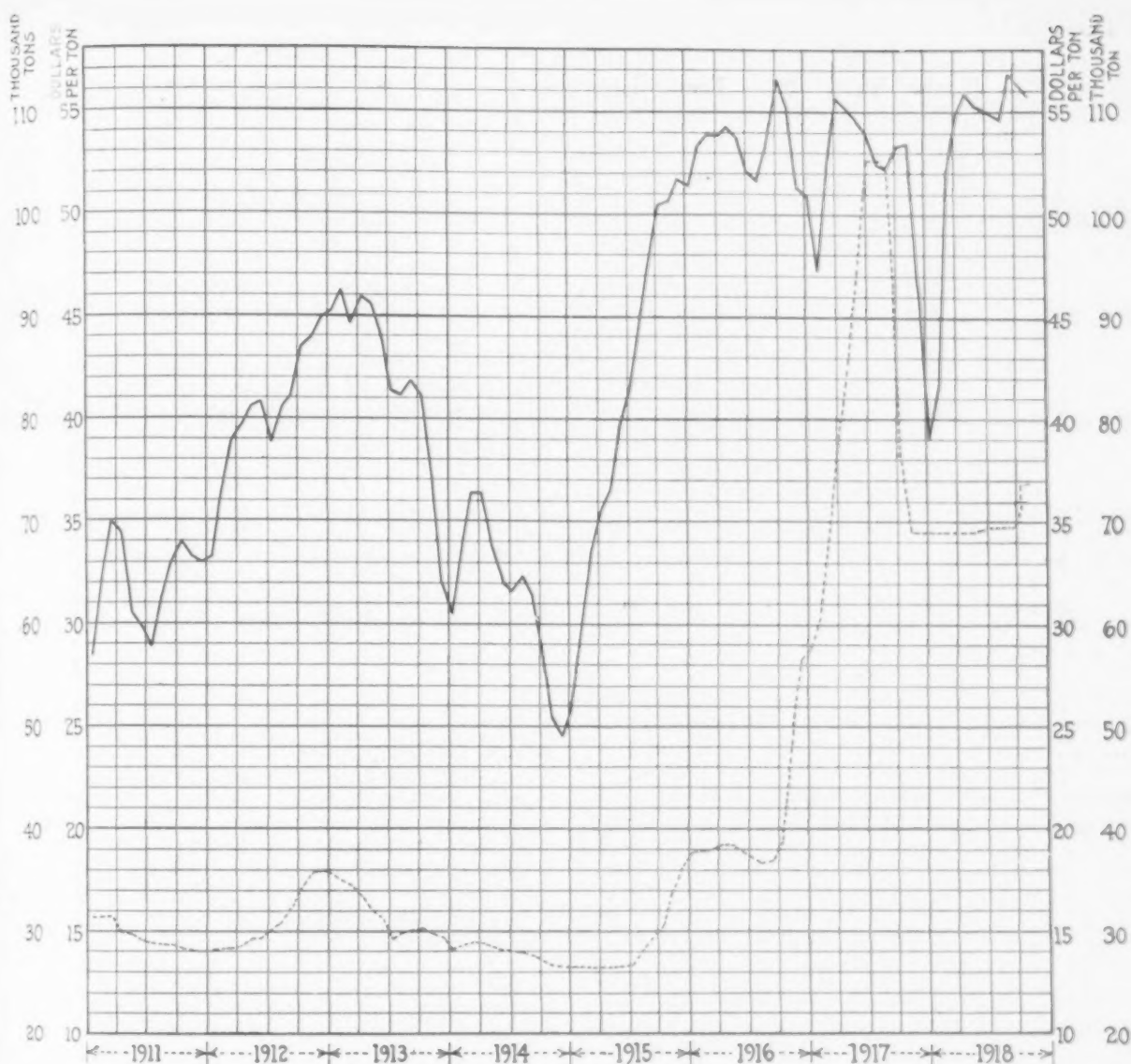
Diagram of Pig-Iron Production and Prices

The fluctuations in pig-iron production from 1910 to the present time are shown in the accompanying chart. The figures represented by the heavy line are those of daily average production by months of coke and anthracite iron. The dotted curve on the chart represents monthly average prices of Southern No. 2 foundry pig iron at Cincinnati, local No. 2 foundry iron at furnace at Chicago, and No. 2X at Philadelphia. They are based on the weekly market quotation of The Iron Age.

Production of Coke and Anthracite Pig Iron in the United States by Months, Beginning Jan. 1, 1914—Gross Tons

	1914	1915	1916	1917	1918
Jan. ...	1,885,054	1,601,421	3,185,121	3,150,938	2,411,768
Feb. ...	1,888,670	1,674,771	3,087,212	2,645,247	2,319,299
Mar. ...	2,347,867	2,063,834	3,337,691	3,251,352	2,213,091
Apr. ...	2,269,655	2,116,494	3,227,768	3,334,960	2,288,211
May ...	2,092,686	2,263,470	3,361,073	3,417,340	2,446,412
June ...	1,917,783	2,380,827	3,211,588	3,270,055	2,323,791
July ...	1,957,645	2,563,420	3,224,513	3,342,438	3,420,988
Aug. ...	1,995,261	2,779,647	3,203,713	3,247,947	3,389,585
Sept. ...	1,882,577	2,852,561	3,202,366	3,133,954	3,418,270
Oct. ...	1,778,186	3,125,491	3,508,849	3,303,038	3,486,941
Nov. ...	1,518,316	3,037,308	3,311,811	3,205,794	3,354,074
11 mos.	21,533,700	26,459,244	35,861,705	35,303,063	33,072,420
Dec. ...	1,515,752	3,203,322	3,178,651	2,882,918	.....
Total	23,049,452	29,662,566	39,039,356	38,185,981	.....

*These totals do not include charcoal pig iron. The 1917 production of this iron was 376,525 tons.



The Full Line Represents the Daily Production of Pig Iron and the Dotted Line Is the Average of the Price Per Ton of No. 2 Southern Pig Iron at Cincinnati, local No. 2 Iron at Chicago and No. 2X Iron at Philadelphia

The figures for daily average production, beginning with January, 1911, are as follows:

Daily Average Production of Coke and Anthracite Pig Iron in the United States by Months Since Jan. 1, 1911—Gross Tons

	1911	1912	1913	1914	1915	1916	1917	1918
Jan.	56,752	66,384	90,172	60,808	51,659	102,746	101,643	77,799
Feb.	61,090	72,442	92,369	67,453	59,813	106,456	94,473	82,835
Mar.	70,036	77,591	89,147	75,738	66,575	107,667	104,882	103,648
Apr.	68,836	79,181	91,759	75,665	70,550	107,592	111,165	109,607
May	61,079	81,051	91,039	67,506	73,015	108,422	110,238	111,175
June	59,585	81,358	87,619	63,916	79,361	107,053	109,002	110,793
July	57,841	77,738	82,601	63,150	82,691	104,017	107,820	110,354
Aug.	62,150	81,046	82,057	64,363	89,666	103,346	104,772	109,341
Sept.	65,903	82,128	83,531	62,753	95,085	106,745	104,465	113,942
Oct.	67,811	86,722	82,133	57,361	100,822	113,189	106,550	112,482
Nov.	66,648	87,697	74,453	50,611	101,244	110,394	106,859	111,802
Dec.	65,912	89,766	63,987	48,896	103,333	102,537	92,997	.....

Blast Furnace Notes

No. 4 blast furnace at the Carnegie Steel Co. Ohio Works, Youngstown, Ohio, resumed operation Nov. 29 after being idle a week on account of coke shortage. One of the three furnaces at Farrell, Pa., blew out Nov. 27.

No. 4 furnace of the Republic Iron & Steel Co. at Haselton, Ohio, was blown in Dec. 2, having been out two months for repairs. It was planned to blow out No. 2 furnace for repairs but this will not be done for some time.

The Wellston Iron Furnace Co., Jackson, Ohio, which blew out one of its furnaces on Nov. 10 to make improvements, will blow in about Dec. 4.

Paving Brick from Blast-Furnace Slag

How good paving and other brick can be made from American blast-furnace slags is suggested in a patent, U. S. 1,259,304, awarded to J. B. Shaw, Alfred, N. Y. He says that, while excellent paving brick is being made from English blast furnaces, an equivalent product has not yet been made in the United States. British practice consists in pouring molten slag into split metal molds, removing the redhot bricks when they have solidified sufficiently to be handled without deformation, and placing them into kilns where they cool and anneal slowly.

These bricks have a "stony" texture, while American bricks made in a similar manner are glassy and brittle. Composition of the slag probably has a great deal to do with these conditions, the British slag containing 26 per cent silica and 22 per cent alumina, while here the corresponding amounts are 34 and 14 per cent respectively. In practice, American slags quickly solidify with a thin, tender skin, retaining a molten interior for a considerable period. To make successful bricks the author specifies that the hot mass must be immersed in redhot sand or some other hot medium which effectually excludes air and furnace gases, in such a manner that the heat from the packing and the molten interior reheats the chilled shell into a very viscous substance. Further cooling must now be arranged so that the exterior and interior of the mass shall cool at about the same rate, from 12 to 18 hr. being the requirement for proper annealing.

PERSONAL

George F. Drake, vice-president and manager Drake Lock-Nut Co., San Francisco, has returned from an extended business trip. He had planned to be gone about two months, but was compelled to take eight months by the reception the Drake Lock-Nut has received in the Eastern part of the country. He reports that one of the largest nut and bolt manufacturers in the United States has taken up the manufacture and sale of these nuts in Cleveland, for Eastern delivery. Mr. Drake will hereafter spend part of his time at the Cleveland plant, but the major part at the San Francisco plant which will be developed further for the Pacific Coast trade and for the extension of its already very satisfactory Oriental business.

John W. Powelson, for a number of years production engineer of the Rochester Motors Co., Inc., Rochester, N. Y., is now connected with the Pittsburgh Model Engine Co. as works manager of the Pittsburgh plant.

T. Karasswa, Tokio, has been touring the Connells-ville coke region the past week at the request of his government. He was the guest of the H. C. Frick Coke Co. while in that locality.

W. C. Kennedy, steam and electrical engineer with the Pittsburgh Crucible Steel Co., Midland, Pa., has resigned to accept the position of operating engineer in charge of steam, electrical and mechanical departments with the Worth Steel Co., Claymont, Del.

The Norwalk Manufacturers Association, Norwalk, Ohio, has elected officers as follows: Chairman, A. H. Cowley, capitalist; vice-chairman, Charles W. Stoup, manager Norwalk works, Crucible Steel Co. of America; secretary and treasurer, I. W. Goodell, president and general manager, Bostwick-Goodell Co. The executive committee is composed of H. A. Gallup, secretary and treasurer Gallup-Ruffing Co.; A. B. Hamilton, president Norwalk Foundry Co.; Peter Theisen, superintendent Fisher Auto Top Co., and L. A. Heston, president and general manager McCrillis Handle Co.

Louis W. Adams has been appointed works manager of the new open-hearth and mill department of the Ashland Iron & Mining Co., Ashland, Ky., effective Dec. 1.

John F. Laboon has been made a member of the firm of Chester & Fleming, engineers, Union Bank Building, Pittsburgh. He was formerly in the employ of this firm, but more recently has been connected with the Pittsburgh Filter Mfg. Co.

O. C. Bornholt, formerly factory manager Holley Bros. Co., Detroit, has become mechanical engineer of the Buick Motor Co., Flint.

E. G. Gunn, formerly production engineer of the General Motors Corporation, in Detroit, has become chief engineer of the Scripps-Booth Corporation.

Richard A. Watson, secretary and production manager American Bronze Corporation, Berwyn, Pa., has resigned his active duties but will continue as a member of the board of directors. He has taken this step in order to carry on experimental work in connection with several patents in which he is interested. His successor in the corporation has not yet been appointed.

Charles W. Nash, president Nash Motors Co., Kenosha, Wis., resumed active connection with the company Nov. 25, having resigned as chief of engineering and production of aircraft under John D. Ryan, Assistant Secretary of War. Mr. Nash relinquished his private business duties July 15 to accept Mr. Ryan's invitation to assist him as director of aircraft production.

C. E. Scheuring, superintendent of the Fort Wayne Branch of the American Road Machinery Co., has resigned to become works manager of the Insley Mfg. Co., Indianapolis.

Thomas A. Carr, works manager of the American International Corporation shipyard, Hog Island, Phila-

delphia, has resigned, effective Dec. 1, to return to the Boston office of Stone & Webster.

R. B. Isner, Elkins, W. Va., connected with the West Virginia Coal & Coke Co., has been appointed district representative for the Fuel Administration, succeeding D. R. Lawson. The territory includes twelve counties, known as the Fairmont-Clarksburg district.

At the annual meeting of directors of the Reading Carwheel Co., Reading, Pa., the following officers were re-elected: H. H. Hewitt, president; W. C. Mullett, secretary-treasurer; and John B. Bowers, general manager. In addition to these officials to serve as directors, the following were elected: E. J. Coleman, Buffalo, and L. B. Schofer, Reading.

Guy E. Tripp, chairman of the board of directors of the Westinghouse Electric & Mfg. Co., Pittsburgh, has returned to that city to resume his duties with the company. Mr. Tripp, with the rank of brigadier general, has been acting as chief of the production of ordnance.

The Chicago Pneumatic Tool Co. announces the appointment of L. C. Sprague as assistant secretary, with headquarters at 52 Vanderbilt Avenue, New York.

E. D. Spicer has resigned his position as factory manager and treasurer of the Moore Steam Turbine Corporation, Wellsville, N. Y., effective Jan. 1. He has been with the corporation since its formation.

Louis J. Campbell, vice-president, Youngstown Sheet & Tube Co., and son of James A. Campbell, president, has been promoted from major to lieutenant-colonel in France. He is with the 309th Field Artillery.

Hugh J. Pritchard has been elected president of the National Conduit & Cable Co. to fill the vacancy caused by the death of George J. Jackson, and G. H. Hawley, who has been connected with the Ansonia Brass & Copper Co., has been elected a vice-president of the National Conduit Company in charge of manufacture.

F. du Pont Thompson, who has been located at Youngstown, Ohio, as district supply manager for the Emergency Fleet Corporation, has been transferred to Philadelphia as manager of purchases and production of the Youngstown and Pittsburgh districts. He was formerly an engineer with the Lackawanna Steel Co., then chief engineer and manager of the Wheeling Mold & Foundry Co.

R. M. Rush, assistant district supply manager of the Emergency Fleet Corporation at Youngstown, Ohio, has returned to Pittsburgh and resumed his work as president of the Rush Machinery Co. and district manager of the Kerr Turbine Co.

A reception is to be given to Robert W. Hunt at the Mid-Day Club, Chicago, on Monday afternoon, Dec. 9, in honor of his 80th birthday anniversary.

No. 5 open-hearth furnace in the battery at Lowellville, Mahoning county, Ohio, was started this week by the Sharon Steel Hoop Co. No. 6 will be fired Dec. 15. With these two additional open hearths, the Lowellville group will have a monthly steel producing capacity of 22,000 tons. At its Sharon, Pa., plant, the company has about one-half as much additional capacity. A continuous bar and billet mill is being installed at Lowellville, which will be completed in January.

Shortage of coke supply has compelled the Carnegie Steel Co. to temporarily suspend operation of No. 4 blast furnace in the Ohio works at Youngstown. This is the first Carnegie blast furnace suspension in the district in many months. Normal steelmaking has not been interfered with, however, as the company reports sufficient scrap and cold iron supply.

The Garland Nut & Rivet Co., Pittsburgh, has changed its name to the Garland Mfg. Co. Robert Garland is president; Henry L. Collins, vice-president; Charles Garland, secretary and treasurer, and John H. Short, assistant treasurer.

OBITUARY

ALFRED ERNST, Pittsburgh, for a number of years consulting engineer for steel companies in the district, died Nov. 27 at his home in that city, aged 57 years. He was a graduate of the Vienna Technical Institute, Vienna, Austria. His first important connection in the United States was as chief engineer of the Lackawanna Steel Co., Buffalo, from 1894 to 1900. Later he was consulting engineer for the Wellman-Seaver-Morgan Co., Cleveland, and more recently he was connected with the Algoma Steel Co., Sault Ste. Marie, Ont., superintending the erection of the latter company's plant. He was a member of the consulting staff of engineers of the United States Bureau of Mines, and one of the leading authorities in the country on technical phases of steel manufacture. He leaves a widow and a daughter.

RUFUS H. KELLOGG, secretary and treasurer Northwest Engineering Works, Green Bay, Wis., died Nov. 24 from pneumonia, aged 28 years. He was a graduate of the college of engineering, University of Wisconsin. Upon the organization of the company above named in April last to take over the business of the Hartmann-Greifling Co., and develop its shipbuilding interests for the purposes of the Emergency Fleet Corporation, Mr. Kellogg became a stockholder and an officer. Since that time he had worked almost incessantly in order to assist the company in meeting its Government contracts. He died on the day that its first ship, the *Toller*, was turned over to the Government.

ARNOLD RUEGG, chief electrical engineer the Falk Co., Milwaukee, died Nov. 26, from pneumonia, following an attack of influenza. He had been connected with the company for more than 16 years and was president of the Falk Employees' Welfare Club.

H. PAUL BUCKINGHAM, president Arcade Malleable Iron Co. and vice-president New England Foundrymen's Association, died Nov. 20, at Worcester, Mass., aged 32 years, after an illness of only a few days, from pneumonia.

ROBERT SHERMAN, vice-president Remington & Sherman Co., New York, manufacturer of safes, died at his home in Brooklyn Nov. 25, aged 49 years.

E. V. McCONVILLE, secretary and sales manager Modern Tool Co., Erie, Pa., died from influenza Nov. 26. He leaves a wife.

Youngstown Sheet & Tube Co. Invites Appointment of Committees

YOUNGSTOWN, OHIO, Nov. 25—Steps have been taken here to adopt a plan by which the Youngstown Sheet & Tube Co. and its employees are to have a system of representation by the workmen and the company similar to that recently inaugurated by the Midvale and Bethlehem companies. C. S. Robinson, vice-president and general manager, presented the matter Friday to a committee of about 500 employees, which has had charge of all war loan campaigns among the company's 13,000 workers in the district.

Mr. Robinson stated he would take advantage of the meeting, called to congratulate the committee on its success in the Fourth Liberty loan, to present the matter of having employees choose committees to elect delegates who might meet with the management to discuss and adopt the representative plan. Requests for the adoption of such a plan had been received, said Mr. Robinson. A resolution favoring it was unanimously adopted. Those present then withdrew and formed committees of five for each department. These committees will hold elections in each department to choose delegates to meet with the management and discuss details of a suitable plan.

France's Need of Machinery

Of special interest as bearing on the demand for American iron and steel for France is a statement made at Paris, Dec. 2, by Jules B. Clausse, president of the Syndicat des Mécaniciens Fonderies in France. He says:

"France must have machinery at the cheapest possible price, in the shortest time. To get this it must be manufactured in France. So the raw material supply is of paramount importance. In this difficult period it is a question of new organization of workshops with their ordinary peace staffs and of winding up the war work under satisfactory conditions. The great problem is to blend the two processes. There were working in France for the national defense on war material 1,700,000 men and women. They must be placed in the civil occupations, as well as those who are demobilized. Even if the majority of women workers returned to their work of pre-war days, there would be about 1,500,000 to be re-employed.

"There will be a demand for labor, but raw materials will be lacking. Mechanical engineering firms are unanimous on the demand for raw material. In this, our allies can help us. They alone can aid us, while our mines are being put in order.

"The decree of July 18, 1916, by which the free importation of metals was prohibited, should be canceled. This decree has been one of the prime factors responsible for the scarcity of raw material from which we are suffering, and has caused the present weakness of the French structural industry.

"Furthermore, all other checks which raise artificially the prices of raw materials must be abandoned. These checks are chiefly customs duties and the existence of a single buyer system for raw material in England. The customs on goods so completely lacking must be broken down, and raw materials allowed free entry into France. The single buyer system, especially that of our steel in England, must no longer exist. Instead, complete commercial liberty must be given to industries."

Independent Steel Export Company

A meeting was held in New York on Tuesday, Dec. 3, of the committee having in charge the organization of an export company for the independent steel manufacturers of the country. The committee consists of John A. Topping, chairman of the board, Republic Iron & Steel Co.; A. C. Dinkey, president Midvale Steel & Ordnance Co.; E. A. S. Clarke, president Lackawanna Steel Co.; E. G. Grace, president Bethlehem Steel Co.; J. A. Campbell, president Youngstown Sheet & Tube Co., and P. D. Block, vice-president Inland Steel Co. The capital of the proposed Independent Steel Products Corporation will probably be not less than \$10,000,000, as the plans contemplate extensive warehouses, both in this country and in foreign trade centers.

Engineering Societies to Place Its Members in Industries

An Engineering Societies' Employment Bureau has been organized by the Engineering Council at the Engineering Societies' Building, 29 West Thirty-ninth Street, New York. It will absorb the separate activities of each of the member engineering organizations devoted to placing its individuals in touch with available positions, with special reference to engineers in the national service who are returning to civil employment. Walter V. Brown has been appointed secretary of the bureau. The need for which the American Engineering Service was organized having passed, its organization has been discontinued and its office force and files have been turned over to the new work. Until a proper basis for fixing a charge can be established none will be required for the service of the bureau.

The McClintic-Marshall Export Co. has been formed to sell, in the foreign field, the products of the McClintic-Marshall Co. and the Riter-Conley Co. with sales offices at 50 Church Street, New York, in charge of R. W. Knight, formerly contracting engineer, Pittsburgh.

Iron and Steel Markets

A FREE MARKET JAN. 1

Replenishing Orders the Present Support of the Market

Pig Iron Production Fell Off in November—The Outlook for Export Trade

Another week of buying to satisfy long-restrained wants finds the steel trade still skeptical of the ability of such demand to cope with the situation soon to be met. The fact is that with the armistice more than three weeks old the steel mills of the country are still engaged to a large extent on war work. Cancellations of orders which would not have been reached by the mills for some weeks or months have naturally brought no shock, and the real test is yet to come.

Sentiment in favor of continuing Government control of iron and steel prices after Dec. 31 has steadily diminished, and the conference between the steel manufacturers' committee and the War Industries Board at Washington Dec. 11 promises to be the end of the chapter on price fixing. Preparatory to the finale, a general meeting of iron and steel manufacturers is called for Dec. 9 in New York.

When it appeared that Washington had no program for readjustment, leaders in the steel industry saw the advantage of a shorter cut to the new basis, in the absence of any power to establish minimum prices.

Actual export business put through is not what would be expected from the amount of inquiry. British export prices announced last week are from \$15 to \$20 per ton above official prices here for heavy products, so that the basis of current export transactions in New York, while higher than that fixed at Washington, is still below the European level. However, real international competition is not yet a factor.

In Great Britain, as restrictions are relaxed, large domestic and export inquiries have appeared, but there is much hesitation. Government subsidies to makers are to be removed in two stages—those on steel products disappear on Jan. 31 and those on pig iron on April 30. The new sheet bar price is £10 15s., but in addition buyers pay 16s. per ton to the Government to compensate for steel subsidies. British galvanized sheets for export have sold at about 6.50c., as against a fixed price of 6.25c. at Pittsburgh.

The run of replenishing orders in various lines of domestic trade keeps up, particularly in bars. More plates are available for the general trade, and this supply promises to increase, as shipyards now have an accumulated supply that will last for four to six months. Demand for structural steel is very light.

That Great Britain will get much of the Belgian and French reconstruction work is taken for granted, but the San Francisco rebuilding suggests that the steel needs may disappoint some predictions and at that may be long drawn out.

Pig iron production again fell off in November, being 3,354,074 tons, or 111,802 tons a day, against 3,486,941 tons in October, or 112,482 tons a day. Coke shortages due to influenza caused several furnaces to bank last week. On Dec. 1 the 360 furnaces in blast had a daily capacity of 111,330 tons, against 113,500 tons a day for 366 furnaces active one month previous.

A good deal is heard of pig iron negotiations for export, but little has been done as yet. There are reported sales by an Eastern steel company of 33,000 tons of Bessemer iron to go abroad. Our London cable revives the report of plans to import 1,000,000 tons of American basic iron to England next year.

There is now little disposition on either side of the pig iron market—certainly less on the buying than on the selling side—to make contracts stipulating that in the absence of a Government price at time of delivery the last official price shall apply. That contract now appears more one-sided than it was regarded one month ago. The prospect of further Government cancellations involving secondary contracts for steel and machinery points to some easing up after months of acute pig iron scarcity.

The weakness in scrap is more in evidence, though on a restricted movement, and there is some unsettling in the ferromanganese market, where 70 per cent metal has sold below \$240.

Some activity in sheet bars is a feature in the Central West. Youngstown mills have taken on considerable business to replace shell steel.

Lake Superior iron ore shipments for the season are over. The total movement by water is 61,156,732 tons, or 1,342,169 tons less than in 1917. A greater falling off was looked for in view of this year's decline in pig iron production.

Pittsburgh

PITTSBURGH, Dec. 3—(By Wire).

Although no official announcement has been made as to the continuance of Government price fixing after Dec. 31, the prevailing opinion in the Pittsburgh trade now is that price control will end with the year, permitting the markets to return to a free and competitive basis on Jan. 1. The resignations of Chairman Baruch of the War Industries Board and Director of Steel Supply Replogle are taken as indications that the Government has abandoned any plan that may have been entertained for control of prices beyond the first of the year. Steel manufacturers and pig iron producers have received notice of a meeting in New York on Monday, Dec. 9, at which it is expected the question will be discussed and recommendations will be formulated for presentation at the meeting in Washington, Dec. 11.

Directly after the signing of the armistice there was a marked sentiment in the trade in favor of continuing Government prices for three or six months, and suggestions were even heard that this control should last for an entire year. More recently, however, sentiment has been veering the other way. There has come the belief that the best way to resume normal conditions

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

	Dec. 3, 1918	Nov. 26, 1918	Nov. 6, 1918	Dec. 5, 1917
Pig Iron, Per Gross Ton:				
No. 2, Philadelphia....	\$39.15	\$39.15	\$39.15	\$34.25
No. 2, Valley furnace....	34.00	34.00	34.00	33.00
No. 2, Southern, Cincinnati...	37.60	37.60	37.60	35.90
No. 2, Birmingham, Ala....	34.00	34.00	34.00	33.00
No. 2, furnace, Chicago*	34.00	34.00	34.00	33.00
Bessemer, deliv., eastern Pa....	36.90	36.90	36.90	33.75
Basic, Valley furnace....	33.00	33.00	33.00	33.00
Bessemer, Pittsburgh....	36.60	36.60	36.60	37.25
Malleable Bess., Chicago*	34.50	34.50	34.50	33.50
Malleable Valley.....	34.50	34.50	34.50	33.50
Gray forge, Pittsburgh....	34.40	34.40	34.40	32.75
L. S. charcoal, Chicago....	38.85	38.85	38.85	37.50

Rails, Billets, Etc., Per Gross Ton:				
Bess. rails, heavy, at mill....	55.00	55.00	55.00	57.00
Ch. rails, heavy, at mill....	57.00	57.00	57.00	57.00
Bess. billets, Pittsburgh....	47.50	47.50	47.50	47.50
Ch. billets, Pittsburgh....	47.50	47.50	47.50	47.50
Ch. sheet bars, P'gh....	51.00	51.00	51.00	51.00
Forging billets, base, P'gh....	60.00	60.00	60.00	60.00
Ch. billets, Philadelphia....	51.50	51.50	51.50	47.50
Wire rods, Pittsburgh....	57.00	57.00	57.00	57.00

Finished Iron and Steel,

Per Lb. to Large Buyers: Cents	Cents	Cents	Cents
Common iron bars, Phila....	3.745	3.745	3.745
Common iron bars, P'gh....	3.50	3.50	3.50
Common iron bars, Ch'go....	3.50	3.50	3.50
Steel bars, Pittsburgh....	2.90	2.90	2.90
Steel bars, New York....	3.17	3.17	3.17
Tank plates, Pittsburgh....	3.25	3.25	3.25
Tank plates, New York....	3.52	3.52	3.52
Beams, etc., Pittsburgh....	3.00	3.00	3.00
Beams, etc., New York....	3.27	3.27	3.27
Skelp, grooved steel, P'gh....	2.90	2.90	2.90
Skelp, sheared steel, P'gh....	3.25	3.25	3.25
Steel hoops, Pittsburgh....	3.50	3.50	3.50

*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

	Dec. 3, 1918	Nov. 26, 1918	Nov. 6, 1918	Dec. 5, 1917
Sheets, Nails and Wire,				
Per Lb. to Large Buyers: Cents				
Sheets, black, No. 28, P'gh....	5.00	5.00	5.00	5.00
Sheets, galv., No. 28, P'gh....	6.25	6.25	6.25	6.25
Wire nails, Pittsburgh....	3.50	3.50	3.50	3.50
Cut nails, Pittsburgh....	5.00	5.00	5.00	4.50
Fence wire, base, P'gh....	3.25	3.25	3.25	3.25
Barb wire, galv., P'gh....	4.35	4.35	4.35	4.35

Old Material, Per Gross Ton:

Carwheels, Chicago.....	29.00	29.00	29.00	30.00
Carwheels, Philadelphia....	29.00	29.00	29.00	31.00
Heavy steel scrap, P'gh....	27.50	28.50	29.00	30.00
Heavy steel scrap, Phila....	27.00	27.00	29.00	27.00
Heavy steel scrap, Ch'go....	26.50	27.00	29.00	28.00
No. 1 cast, Pittsburgh....	28.00	29.00	29.00	28.00
No. 1 cast, Philadelphia....	29.00	29.00	29.00	31.00
No. 1 cast, Ch'go, net ton....	27.00	27.00	29.86	23.50
No. 1 RR. wrot., Phila....	34.00	34.00	34.00	35.00
No. 1 RR. wrot., Ch'go, net....	28.00	28.00	29.86	31.25

Coke, Connellsville, Per Net Ton at Oven:

Furnace coke, prompt....	\$6.00	\$6.00	\$6.00	\$6.00
Furnace coke, future....	6.00	6.00	6.00	6.00
Foundry coke, prompt....	7.00	7.00	7.00	7.00
Foundry coke, future....	7.00	7.00	7.00	7.00

Metals,

Per Lb. to Large Buyers: Cents	Cents	Cents	Cents
Lake copper, New York....	26.00	26.00	26.00
Electrolytic copper, N. Y....	26.00	26.00	26.00
Spelter, St. Louis....	8.25	8.30	8.60
Spelter, New York....	8.60	8.65	8.95
Lead, St. Louis....	6.75	7.75	7.75
Lead, New York....	7.65	8.05	8.05
Tin, New York....	70.00	71.00	75.00
Antimony (Assate), N. Y....	8.50	8.50	10.50
Tin plate, 100-lb. box, P'gh....	\$7.75	\$7.75	\$7.75

is to resume, and that to continue Government prices is merely postponing the day of readjustment.

At present the order books of a majority of steel manufacturers and pig iron producers are fairly well filled, but if three months of hesitancy in buying were to come, a considerable tonnage would be worked off. Moreover, Government cancellations will undoubtedly show an increase and producers will presumably be in greater need of orders by April 1 than they are at present. This, at least, is the way that some who favor termination of Government price control on Dec. 31 now view the situation. They concede that uncertain conditions and great hesitancy on the part of buyers must be reckoned with and their position is that the industry is in as favorable a position now as it will be at any time to face this readjustment.

There is a waiting market at present. Some little buying is being done by domestic consumers to cover immediate requirements, and a number of export inquiries are in the market, notably one for 10,000 tons of skelp for England. In the aggregate, however, the new business now going on the books is not large. Buyers are not willing to commit themselves in most instances where deliveries beyond Jan. 1 are quoted by the mills, unless there is a provision that protection against declines in price will be given. The automobile industry is insisting upon this clause, but usually the mills will agree to this only with the proviso that they be given the benefit of price advances. Some firm contracts are reported to have been made on sheets, when deliveries could be obtained in no other way, but as to most of their purchases consumers are waiting further developments.

In the pig iron trade there is practically nothing being done except minor transactions in resale iron. Scrap is weak and so are ferroalloys, but there is scarcely enough business to make a market.

Pig Iron.—Sales of pig iron during the past week have been almost entirely small lots which consumers

wished to dispose of before inventory. A sale of 2000 tons of basic is reported at the Government maximum price, but the merchant who handled the transaction received a profit and the net price to the consumer who disposed of the iron was less than he paid for it. Although there are some inquiries in the market for next year, buyers show no disposition to place contracts at this time even on the basis of current market quotations at time of shipment. Producers of iron do not profess to know what prices may be after the first of the year. If Government control is withdrawn it will create a situation which at present cannot be forecasted. There are some sellers who believe that prices will be higher and they base their belief on the fact that there is presumed to be a world shortage of pig iron. Export business in iron is counted upon to take whatever may be available. It is reported here that England, France and Italy will be large buyers of iron within the near future, but no definite inquiries have as yet been received. Those who expect a reduction in the price of iron predict that it will be slight in view of high production costs. If the price should go much lower a number of furnaces, it is predicted, would blow out.

Basic pig iron, \$33; Bessemer, \$35.20; gray forge, \$33; No. 2 foundry, \$34; No. 3 foundry, \$33.50, and malleable \$34.50, all per gross ton at Valley furnace, the freight rate for delivery in the Cleveland and Pittsburgh district being \$1.40 per ton.

Billets and Sheet Bars.—A leading producer of billets and sheet bars is in practically the same position to-day as regards production and shipments as it was before the signing of the armistice. Small tonnages of semi-finished material are being picked up by brokers, but it is difficult to find a market for them. They are mostly resale lots, and their owners want the full Government price, though in most cases willing to give a commission to a broker. The leading sheet interest reports scarcely any improvement in its supply of sheet bars, but some of the independent mills are

in much better position than a few weeks ago because of cancellation of shell steel, and in the Youngstown district a considerable tonnage of sheet bars has been taken on by steel plants.

We quote 4 x 4 in. soft Bessemer and open-hearth billets at \$47.50, sheet bars \$51, forging ingots \$73, and forging billets \$60 base, all f.o.b. at mill, Pittsburgh or Youngstown.

Structural Material.—One of the first indications of reviving interest in steel construction work is an announcement that the city of Pittsburgh will build two new steel bridges at a total cost of about \$2,250,000 and involving 10,000 tons or more of steel. No request for bids has yet been made. Fabricators have no other important work in sight and the market is expected to remain quiet until the first of the year at least.

We quote beams and channels up to 15 in. at 3c. at mill, Pittsburgh, for fourth quarter.

Sheets.—Some of the independent makers have been taking business for delivery in December, though possibly some of these shipments will run over into January. The leading interest is not in position to make nearby deliveries. Much of the war business was for heavy blue annealed sheets, and mills which were able to take this class of work are much better engaged at present than those whose output is mainly small sizes, such as jobbers require. Quite a volume of orders is being offered the mills, possibly more new business in sheets having been placed since the signing of the armistice than in any other steel product. Most of these requirements, however, are for delivery this month, as neither buyers nor sellers are anxious to make commitments for next year until it is definitely known whether the Government will continue to fix prices. Prices on sheets are given on page 1425.

Tin and Terne Plate.—Manufacturers of food containers have good stocks and are not doing any buying. Practically the only new business is small orders from jobbers for both tin and terne plate. Otherwise the mills are busy filling old orders, of which there is a fairly good volume on the books. Production of terne plate is showing some increase, but output of tin plate is still on about a 70 per cent basis. We quote tin plate at \$7.75 per base box, Pittsburgh, for fourth quarter. Prices on terne plate are given on page 1425.

Shafting and Screw Stock.—Production of shafting is not being increased, owing to the shortage of steel and also to the fact that since considerable business has been canceled the output is sufficient to take care of such orders as remain on the books. Although there has been some interest in screw stock among automobile makers, orders are coming in rather slowly. Buyers seem to be awaiting further developments in the price situation.

For fourth quarter we quote cold-rolled shafting at 17 per cent off list in carloads and 12 per cent in less than carloads, f.o.b. Pittsburgh.

Spikes.—No new business is being placed. Inquiries which were issued just prior to the signing of the armistice have not been acted upon. Small spikes are in good demand, users urging shipments on old orders. There have been practically no cancellations of orders for spikes and order books are well filled.

Standard sizes of railroad spikes 9/16 x 4 1/2 in. and larger, \$3.90 per 100 lb. in lots of 200 kegs of 200 lb. each, or in larger lots. Boat spikes, \$5.25 per 100 lb.; rack bolts, \$4.90 base in lots of 200 kegs or more; less than 200 keg lots, \$1 per 100 lb. extra. All f.o.b. Pittsburgh.

Ferroalloys.—Ferromanganese and spiegeleisen are not in demand and the market is weak. An inquiry for 500 tons of spiegeleisen brought such a variety of quotations, mostly from brokers who had resale lots to offer, that the prospective buyer decided not to purchase at this time. It is reported that nearly all the quotations were below the price recently quoted, namely \$75 for 16 to 18 per cent. Ferrosilicon, both 50 per cent and Bessemer grades, is not in demand and prices are weak. Consumers apparently feel that this is not the proper time to buy, and as many of them have good stocks of ferroalloys on hand no business is being done.

We quote 70 per cent ferromanganese at \$250, delivered, and 16 to 18 per cent spiegeleisen, \$75, f.o.b. furnace, an addition or deduction of \$3.50 per unit being made, when the

manganese content is above or below the standard. For delivery over the remainder of the year, and for most of the year, 50 per cent ferrosilicon is quoted at \$135 to \$140.

We quote 9 per cent Bessemer ferrosilicon at \$55; 10 per cent, \$57; 11 per cent, \$60.30; 12 per cent, \$63.60. We quote 6 per cent silvery iron, \$42; 7 per cent, \$43; 8 per cent, \$45.50; 9 per cent, \$47.50; 10 per cent, \$50. Three dollars per gross ton advance for each 1 per cent silicon for 11 per cent and over. All the above prices are f.o.b. makers' furnace, Jackson or New Straitsville, Ohio, these furnaces having a uniform freight rate of \$2.90 per gross ton, for delivery in the Pittsburgh district.

Coke.—The Fuel Administration has notified coke producers and consumers by telegraph that there will be no more allocations of coke and that consumers are henceforth free to deal directly with sellers. Owing to the uncertainty as to whether there will be a Government price in effect after Dec. 31, there is practically no contracting for forward delivery. The attitude of sellers is that the present Government price should rule in the event that no Government price is fixed for first quarter, but this seemingly is not acceptable to consumers and the result is a waiting market. Output of coke in the Connellsville region continues to fall off at an increasing rate due to the influenza epidemic.

We quote 48 hr. beehive blast furnace coke at \$6.72 hr. beehive foundry coke at \$7 and crushed coke over 1/2 in. at \$7.30, all in tons of 2000 lb. at oven. We quote by-product coke at \$5.70 for run of ovens and \$6.70 for selected foundry in all States but Alabama and Washington. To these base prices should be added the freight rate from the competing beehive coke district which takes the lowest freight rates to the point where such by-product coke is produced, except that there shall be added for coke manufactured in New England 7c. for each 5c. above 60c. in the freight charges per ton (2240 lb.) of coal for water transportation on the coal used in the manufacture of such coke.

Skelp.—An export inquiry from England calls for 10,000 tons of skelp. We quote grooved skelp at 2.90c., universal skelp at 3.15c.

Hoops and Bands.—Production of hoops and bands is still much restricted, but is sufficient to take care of the demand. Automobile makers continue to inquire. We quote hoops, bands and strips at 3.50c. base for fourth quarter.

Wrought Pipe.—Production of butt-weld pipe is on a normal basis again and orders are being filled. There has been little change aside from this in the wrought-pipe situation since the signing of the armistice. Mills have a fair quantity of business on their books and though they have some cancellations from jobbers, practically all the Government business is going ahead without interruption. Discounts on iron and steel pipe are given on page 1425.

Boiler Tubes.—There is nothing new to report, as makers are continuing with work for the Government which will keep them busy for some time. Discounts on boiler tubes are given on page

Hot-Rolled Strip Steel.—A few more cancellations have been received during the past week by makers, but to offset this a little business is being placed by the automobile industry. Makers are quoting deliveries in 60 days, but consumers want to know what the price will be on shipments running over into next year. They generally ask to be protected against price declines and makers are usually willing to do this provided a reciprocal arrangement is made. Production is from 50 to 60 per cent, shortage of steel still being a restrictive factor.

We quote hot-rolled strip steel at \$3.50 per 100 lb., Pittsburgh, for third quarter, 50c. per 100 lb. additional being charged for special stamping quality.

Cold-Rolled Strip Steel.—Deliveries of cold-rolled strip steel can be made in 30 days. Makers of automobiles and parts are offering a little new business, but aside from this, demand is light.

We quote cold-rolled strip steel at \$6.50 base per 100 lb. f.o.b. Pittsburgh, for 1 1/2-in. and wider, 0.100 in. and thicker, hard temper in coils under 0.20 carbon. Boxing charge 50c. per 100 lb.

Plates.—The plate situation continues practically unchanged, as the mills are making large shipments for

ship building and railroad work. It is easier for commercial users to obtain supplies on old orders, but new business is practically at a standstill aside from a few export inquiries.

We quote sheared plates at 3.25c., Pittsburgh mill, for fourth quarter.

Wire Rods.—Production is showing a slight increase, but demand is not active. Shipments are going forward on old orders and this constitutes the principal mill activity. Prices are given on page 1425.

Wire Products.—The backbone of new business in wire products is the inquiry from country districts for carload lots of nails and wire. No large tonnages are being bought, but a few export sales in moderate tonnages have been closed. Domestic buyers are taking only what they can immediately turn over. Prices are given on page 1425.

Old Material.—It is difficult to quote prices on various grades of iron and steel scrap because of the small number of transactions which have taken place since the signing of the armistice. Until last week, there was practically no activity aside from cancellations. The first important sale was of about 4000 tons of shell steel, which was taken by a dealer and applied on contracts for heavy melting steel made some time ago at \$29. It is reported, however, that some of this material was classified as grade B low-phosphorus scrap. Our quotation last week of \$32 for low-phosphorus scrap was based on a very pronounced weakness in the market due to the fact that this large tonnage of shell steel was to be sold. Since then a sale of 500 tons of grade A low-phosphorus scrap has been sold at \$36.50, and accordingly we make that our quotation this week. Grade B low-phosphorus is quoted by dealers at \$32. Unguaranteed low phosphorus will probably no longer be sold as such, but will be classified as heavy melting steel. The quotation on unguaranteed low phosphorus is therefore omitted. At this writing, a deal is being negotiated for considerable tonnage of heavy melting steel which a dealer has offered at \$27.50. Last week 5000 tons of shell turnings were offered in this market by a Canadian interest at \$19, this being \$5 a ton less than the Government maximum price. Shell turnings are a drug on the market, and prices are very weak, but in the absence of any reported sales it is impossible to quote the market other than nominal. The following quotations represent principally dealers' views as to prices at which they would be willing to sell.

Heavy steel melting scrap, Steubenville, Poland, Brackenridge, Monessen, Midland and Pittsburgh, delivered.....	\$27.50 to \$28.50
No. 1 cast scrap, for steel plants (nominal)	28.00 to 28.50
Rolling rails, Newark and Cambridge, Ohio, Cumberland, Md., Franklin, Pa., and Pittsburgh (nominal)	34.00
Compressed steel scrap.....	27.00 to 28.00
Bundled sheet scrap, sides and ends, for consumers' mills, Pittsburgh district	27.00 to 28.00
Bundled sheet stamping scrap (nominal)	22.00 to 23.00
No. 1 busheling scrap.....	27.00 to 28.00
Railroad grate bars (nominal).....	25.00
Low phosphorus melting stock (guaranteed) ..	32.00
Low phosphorus melting stock (bloom and scrap ends, heavy plates).....	36.50 to 37.00
Iron car axles (nominal).....	46.00 to 46.50
Locomotive axles, steel (nominal).....	46.00 to 46.50
Steel car axles (nominal).....	46.00 to 46.50
Railroad malleable (nominal).....	31.00 to 32.00
Machine shop turnings.....	17.50 to 18.00
Cast iron wheels.....	28.00 to 28.50
Roller steel wheels (nominal).....	33.00
Sheet bar crop ends (at origin) (nominal) ..	35.00
Heavy steel axle turnings (nominal).....	19.00 to 22.00
Heavy breakable cast scrap.....	27.00 to 28.00
Cast iron borings.....	17.50 to 18.00
No. 1 railroad wrought scrap.....	31.00 to 32.00

Iron and Steel Bars.—There is very little being done in steel bars as yet. A leading maker will quote only for prompt delivery, and buyers are not anxious to anticipate. There is considerable dissatisfaction with the bar iron price schedule, but makers are adhering to it. Bar iron rolling mills in this district make chiefly

a refined grade of iron and their output continues to go largely into merchant ship and navy work.

We quote soft-steel bars rolled from billets at 2.90c.; from old steel rails, 3c.; common iron bars, 3.50c.; bar iron rolled from selected scrap, 4.25c.; and refined iron bars at 5c. at mill, Pittsburgh, for fourth quarter.

Engine and Boiler Company Will Expand

The purchase of the Clark Engine & Boiler Co., Kalamazoo, Mich., by capitalists of other cities has been followed by the announcement that the business is to be expanded. The sale, which was inaugurated over 30 days ago, was in reality completed to a certainty last week and now the property is in the hands of the following: J. A. Sheldon, Flint, chief efficiency engineer of the Buick Motor Car Co.; Edward R. Grace, Detroit, vice-president of the *Michigan Manufacturer and Financial Record*; B. L. Winchell, Jr., Chicago, Western manager of the Kerite Insulated Wire & Cable Co.; J. A. Gordon, Detroit, commercial and electric trucks and industrial electric trucks; E. A. Barnes, Kalamazoo, formerly efficiency engineer of the Buick Motor Car Co.; A. L. Moses, Detroit, manufacturer; A. L. Fenley, Chicago, Kerite Insulated Wire & Cable Co., and A. S. Hodson, Chicago, Union Switch & Signal Co. James J. O'Meara, chief accountant for the Clark Engine & Boiler Co., and Fred R. Eaton, cashier of the Kalamazoo National Bank, are the Kalamazoo stockholders. The new officers of the company are: President, J. A. Sheldon; vice-president, Edward R. Grace; secretary, B. L. Winchell, Jr.; treasurer, J. A. Gordon; general manager, E. A. Barnes.

J. A. Gordon was principal in bringing about the transaction. The property taken over is valuable, consisting of over 100,000 sq. ft. In addition are all the factory buildings, with a floor space of about 70,000 sq. ft., and all machinery, equipment and material on hand.

The plant is at present running light, but as soon as material can be secured it is the intention to start work in the boiler department at full capacity and add other departments as rapidly as possible. In the meantime much new equipment and machinery is being added and the entire institution overhauled. E. A. Barnes, general manager, is an expert in factory organization. One of the first steps to be taken will be to install electric power for the driving of all the machinery.

A special bulletin giving suggestions on the prevention of punch-press accidents has been issued by the Industrial Commission of Wisconsin as the result of a noticeable increase in finger injuries to punch and stamping press operators in Wisconsin industries in recent months. The bulletin points out that most punch-press accidents occur in forming operations, and are due principally to false motions by the operator and to the repeating of presses. Without mechanical guards, even a most careful operator runs a great chance of being injured on a punch press.

A note on the formation of coke was recently presented to the Paris Academy of Sciences, according to the *Engineer*, London. In it the authors say that coals which are friable, owing to their high content of volatile matter, can be considerably improved by partial distillation at low temperature. A Durham coal containing 28.1 per cent of volatile matter was treated in this way at 450 deg. C., and this coal, which was quite unsuitable for coking in its natural state, gave a normal quality coke after about one-third of its volatile constituents had been removed.

The increased cost and scarcity of certain machinery on the Pacific Coast are shown by a transaction recently completed by the Tintic Standard Mining Co., Eureka, Utah. A hoist, installed five years ago at the Gladstone mine, French Gulch, Cal., has been purchased for \$13,000, the price when bought for the Gladstone property; in addition, the purchaser paid \$2000 for removing the hoist from the mine and arranging for shipment, as well as the freight charge to Eureka. The complete hoist weighs about 50 tons.

Chicago

CHICAGO, Dec. 2—(By Wire).

The attitude of consumers is one of watchful waiting, with efforts bent on measuring the situation. That a majority expect prices to decline can not be questioned. Meanwhile, producers are holding firm, pointing to high labor and raw material costs and to the fact that these cannot be radically changed by any abrupt means without harmful disturbance. The turning point may come with the meeting of the so-called price-fixing committee of the War Industries Board, Dec. 11, which may throw some light on the future of prices.

In both iron and steel little is being done at existing levels, which so far are unimpaired. Lead is down 1c. from the Government maximum. Over the producers has come a great change, with most priorities annulled, many munitions orders canceled and alterations belonging to the past. The bulk of commitments has been swept out of the way and where delivery of commercial forms of steel were formerly promised only in the hazy future, if at all, deliveries in January and February are now assured. Yet the great majority of those who almost prayed for material show a disposition to wait, unless they are guaranteed against a decline after the year ends. Producers will not consent to this and propose the last-named Government price as the contract price. They point out that high labor and raw material narrow the margin between cost and selling price as matters are. The hope is expressed that when prices come down, as they must sooner or later, the decline will be general and affect labor and materials as well.

With free productive capacity in sight, the market, from the producer's viewpoint (and from labor's) needs support. It has been suggested that this might come from exports, but the Government still needs and controls the ships, and export licenses are not freely granted. France has placed some orders and is urging delivery on old ones. The volume of railroad buying has been disappointing. Public work, also looked to, is moving slowly, and here, also, is shown a disposition to weigh prices to a greater extent than had been expected.

Pig iron producers are no more inclined than they were to accept cancellations, and this has caused a few lots of iron to appear in brokers' hands, but no resales are yet reported in the old material market. Transactions are almost entirely between dealers and brokers against old contracts, and further declines are recorded.

Pig Iron.—Consumers for the most part are waiting, and meanwhile are endeavoring to measure the situation. The producers adhere to their stand that they will accept no cancellations from former munitions makers or anyone else, and this has resulted in a few lots being placed in brokers' hands for disposal. According to some statements, these offerings will not lead to any reduction in prices for the reason that their aggregate volume is not great. Up to the present time it is a fact that prices show no impairment, despite the belief of some consumers that they may do better by waiting. One consumer is so certain that a lower level will prevail that he has offered for sale iron, of which he has no excess, believing that he can buy cheaper later on, a procedure which the weight of opinion calls perilous. There is some buying from day to day on the basis of the present market price, with the stipulation that after Jan. 1 the last-named Government maximum shall apply, if official price regulation has then ceased. The actual attempts to cancel are not so many as might be supposed, and the refusal of the producers is invariably accepted. In one instance, extended delivery was agreed to. It is felt that a great deal depends on the outcome of the price meeting to be held Dec. 11, as after that date consumers will know what they have to face. A few export inquiries find their way to this city, one being for 500 tons for Italy. Some fair-sized lots of silvery have been taken. Practically all of the furnaces are agreeable to taking business for the first half, and nearly all are shipping more regularly and in a generally satisfactory manner. Belated allocations

continue to come along, one just received allotting iron to a melter who a few hours before said he would not accept a resale offering. It is presumed that some one in Washington desires to clear his desk of accumulated papers.

The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malleable and steel-making irons, including low phosphorus, which are f.o.b. furnace, and do not include a switching charge averaging 50c. per ton:

Lake Superior charcoal, Nos. 2 to 5.....	\$38.70 to \$39.00
Lake Superior charcoal, C to AA.....	40.70 to 42.50
Lake Superior charcoal, No. 6.....	41.20 to 41.50
Northern coke foundry, No. 1, silicon, 2.25 to 2.75.....	43.25
Northern coke foundry, No. 2 silicon, 1.75 to 2.25.....	41.00
Northern high-phosphorus foundry.....	41.00
Southern coke, No. 1 foundry and No. 1 soft silicon, 2.75 to 3.25.....	42.00
Southern coke, No. 2 foundry, silicon, 2.25 to 2.75.....	40.25
Southern foundry, silicon, 1.75 to 2.25.....	39.00
Malleable, not over 2.25 silicon.....	41.50
Basic.....	38.00
Low phosphorus (copper free).....	41.00
Silvery, 7 per cent.....	50.00

Ferroalloys.—In Chicago there have been no transactions to test the market in ferromanganese, but it is conceded that lower prices must come. The leading independent steel maker has asked that its ferroalloy contracts be suspended. One ferromanganese and spiegeleisen interest states that it is still holding to \$250, but it is admitted that small producers may have made concessions. Ferrosilicon is held at \$155 to \$162.50 for the reason that the makers are well sold up. Scattering sales of 70 per cent ferromanganese are reported to have been made in Pittsburgh at \$225. The Chicago representative of a Pacific Coast maker of ferromanganese at the request of the furnace has asked for offers, but none are forthcoming. That this interest would make concession is conceded, and \$225 and perhaps less would be accepted. Spiegeleisen has been done here at \$70 furnace, but none of the big users are in the market.

We quote 70 per cent ferromanganese nominal at \$250, delivered; 50 per cent ferrosilicon at \$155 to \$162.50, delivered, and 16 to 18 per cent spiegeleisen at \$70, furnace.

Structural Material.—New bids are in for the Michigan Boulevard improvements, which calls for an 8000-ton bridge over the Chicago River, but as yet there has been no award. No structural lettings are announced this week. The indications are for easier deliveries of shapes.

The official mill quotation is 3c., Pittsburgh, which takes a freight rate of 27c. per 100 lb. for Chicago delivery. Jobbers quote 4.27c. for material out of warehouse.

Plates.—The general demand for plates is better than for shapes and bars. With the change that has come over things, tank plates are obtainable for January and February delivery. Only Government work can command delivery this month. While ship work is going on, it is not so feverishly pursued as formerly, and domestic users have a chance. The mills are still operating at capacity and hope to continue on that scale. The price is firm.

The official mill quotation is 3.25c., Pittsburgh, the freight to Chicago being 27c. per 100 lb. Jobbers who have stock quote 4.52c.

Sheets.—A heavy sheet demand is looked for after the first of the year, the sources being both foreign and domestic. In January it is expected shipments will be made with comparative freedom. A local mill now has 16 out of 17 mills operating.

Chicago delivery out of stock regardless of quantity. No. 16 blue annealed, 5.52c.; No. 28 black, 6.52c., and No. 28 galvanized, 7.77c.

Bars.—Some business in mild steel bars is being booked every day, but the market is feeling the waiting attitude of consumers. Cancellations have been fewer in steel bars than in other finished steel products, but January and February will bring easier deliveries. A cancellation accepted without question came from a builder of wooden ships whose Government contract had been canceled. Bar-iron makers report that in the past

10 days their business has been unusually good, what ordinarily constitutes a month's business having been booked in that time. Rail carbon bars are slow. Although rail carbon bars are coming on the market more freely, all prices are holding up.

Mild prices are: Mild steel bars, 2.90c., Pittsburgh, taking a freight rate of 27c. per 100 lb.; discard bars, 3.25c., Chicago; common bar iron, 3.50c., Chicago; refined iron bars, 4.25c. to 5c.; rail carbon, 3c., Chicago.

Johannes quote soft steel bars, 4.17c., bar iron, 4.17c., for 1/4 in. thick and heavier. Reinforcing bars, 4.29 1/2c. base. Under the new price there is no charge for twisting, but extras for sizes are quoted as per card. Shafting, list plus 13 per cent.

Rails and Track Supplies.—Except for fill-in orders for track fastenings there is but little activity aside from various lots of rails ordered for export to France.

Standard railroad spikes, 3.90c., Pittsburgh. Track bolts, with square nuts, 4.90c., Pittsburgh. Tie plates, steel, 3.25c.; tie plates, iron, 3.75c., f.o.b. maker's mills. The base for light rails is 3c., f.o.b. maker's mill, for 25 to 45-lb. sections, lighter sections taking Government extras.

Boils and Nuts.—Consumers show a growing tendency to await developments before buying for future delivery.

Structural rivets, 5.67c.; boiler rivets, 5.77c.; machine bolts up to 3/8 x 4 in., 37 1/2 per cent off; larger sizes 25 and 1/2 off; carriage bolts up to 3/8 x 6 in., 32 1/2 off; larger sizes, 20 off; box pressed nuts, square, tapped, 78c. off; hexagon tapped, 58c. off; coach or lag screws, gimlet points, square heads, 30 per cent off. Quantity extras for nuts are canceled.

Cast-Iron Pipe.—No inquiries or lettings are announced and the makers look for a quiet period.

We quote per net ton, f.o.b. Chicago, ex-war tax, as follows: Water pipe, 4-in., \$69.80; 6-in. and larger, \$66.80; steam and gas pipe, \$1 extra.

Wire Products.—In the last two or three days inquiry has been lighter, the consumers having adopted a policy of merely watching the market, because of a feeling that lower prices may come. The reports of wire salesmen are optimistic as to the future, and the general belief is that wire prices are reasonable considering labor and other costs. The mills are behind in their orders for nails.

Old Material.—The market almost entirely represents transactions between dealers and brokers on old contracts. Consumers are buying practically nothing, an exception being the purchase of some machine shop turnings at \$12.50. The railroads, since they find they can no longer sell direct to consumers at full maximum prices, are now more freely submitting their offerings to the dealers. Re-rolling rails, recently so scarce, are now appearing in greater volume. Prices must settle before there can be any considerable activity involving the mills which have but recently canceled many orders. Further sharp declines are noted.

We quote for delivery in buyers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Old iron rails.....	\$37.00 to \$39.00
Re-rolling rails.....	55.00 to 60.00
Old car wheels.....	29.00
Old steel rails, re-rolling.....	31.00 to 32.00
Old steel rails, less than 5 ft.....	31.00 to 32.00
Heavy melting steel.....	26.50 to 27.00
Frags, switches and guards, cut apart.....	26.50 to 27.00
Shedding steel.....	26.50 to 27.00
Heavy steel axle turnings.....	22.00 to 23.00

Per Net Ton

Iron angles and splice bars.....	\$24.82
Iron arch bars and transoms.....	40.50
Steel angle bars.....	28.00 to 29.00
Iron car axles.....	41.52
Steel car axles.....	41.52
No. 1 railroad wrought.....	28.00 to 29.00
No. 2 railroad wrought.....	27.00 to 28.00
Cut forge.....	27.00 to 28.00
Pipes and flues.....	22.00 to 23.00
No. 1 busheling.....	24.50 to 25.50
No. 2 busheling.....	16.00 to 17.00
Steel knuckles and couplers.....	30.36
Coil springs.....	30.36
No. 1 cast scrap.....	27.00 to 28.00
Boiler punchings.....	32.59
Locomotive tires, smooth.....	35.00 to 36.00
Machine-shop turnings.....	12.50 to 13.50
Cast borings.....	13.50 to 14.50
Slabs, plate and light cast scrap.....	20.00 to 21.00
Grate bars.....	20.00 to 21.00
Brake shoes.....	20.00 to 21.00
Railroad malleable.....	27.00 to 27.50
Agricultural malleable.....	24.00 to 25.00
Country mixed scrap.....	16.00 to 17.00

Philadelphia

PHILADELPHIA, Dec. 3.

A very noticeable change in opinion has taken place in regard to Government regulation of prices. For a time after the signing of the armistice, there was a general feeling that it would be well for the Government to maintain a pretty firm hold on the situation and fix maximum prices for at least another quarter. There was also some discussion as to the advisability of fixing a minimum price, but since the officials at Washington have removed nearly all restrictions, the trade in enjoying its "new freedom" and hopes it will not be hampered by regulation. Another reason for change of sentiment is that it is recognized that the trade must some day take care of itself and that perhaps the sooner the better. The prevailing sentiment is more optimistic and those actively in touch with conditions believe that it will be easier than had been expected for business to readjust itself. Men in the iron and steel trade who have been living in Washington and engaged in official work or have made frequent visits to the National capital have a very distinct impression that Washington is anxious to escape responsibility for further regulation, and that price fixing will not be continued after Jan. 1 except upon earnest request of steel manufacturers.

As to foreign trade, developments are not very encouraging. While a fair tonnage of pig iron has been booked for shipment abroad, sales of finished material for export are almost negligible. The question as to what will be done with the 200,000 tons of plates bought by Japanese shipbuilders over a year ago at about 8c., but not delivered, has not been decided. Some of the Japanese buyers have offered to take the tonnage, provided it can be delivered within a few weeks.

One feature of the present situation which prevails as to all products except ferroalloys and scrap is that very little effort is being made by buyers to obtain price concessions. Conservative buyers do not wish to be considered as active in bringing about demoralization and the extent to which the Government price is regarded as a minimum is rather surprising. Cancellations on pig iron and finished products are not numerous.

Pig Iron.—With the exception of a sale of a fair tonnage of Bessemer pig iron for export, concerning which transaction no details are announced, the market is extremely quiet. Now and then a few tons of iron are bought, but transactions are few. The market is, however, dull rather than weak. As is well known, much iron was sold simply "at Government price" and if the Government has no price after Jan. 1, the question as to what price will prevail on these contracts must be settled. Word from Washington is that allocations are ended, but that the Government may make requests as to delivering certain limited tonnages. We quote standard grades of iron for delivery in Philadelphia, except low phosphorus grades, for which f. o. b. furnace prices are quoted:

Eastern Pennsylvania No. 1 X.....	\$40.90
Eastern Pennsylvania No. 2 X.....	39.15
Eastern Pennsylvania No. 2 foundry.....	37.90
Virginia No. 2 X.....	41.75
Virginia No. 2 foundry.....	40.50
Basic.....	36.90
Gray forge.....	36.90
Standard low phosphorus (f.o.b. furnace).....	54.00
Low phosphorus (copper bearing, f.o.b. furnace).....	51.00

Ferroalloys.—Further weakness in ferroalloys has developed and the quotation of \$250 for ferromanganese is nominal, as brokers are offering this alloy at \$240, and reports of sales at much lower quotations are current. Spiegeleisen is even weaker than ferromanganese, but it is difficult to quote accurately. We quote 70 per cent ferromanganese at \$240 delivered and 16 to 18 per cent spiegeleisen at \$65 f. o. b. furnace.

Coke.—The scarcity of coke is shown by the fact that a furnace in eastern Pennsylvania which has been out of blast for a long time and has been rebuilt, and

is ready to operate, has not been placed in commission because of inability to obtain a satisfactory supply of coke. The foundries, however, have little difficulty in getting all the coke they need, although much of it is of poor quality.

Bar Iron.—The bar iron schedule is not standing the test of competitive conditions, and it is probable that bar iron manufacturers will make another revision which will enable them to meet competition from the Central West. It is expected that there will be three grades of bar iron—best refined, refined and common, with 5c. as the price for the best refined, heretofore called refined, while 3.50c. will continue as the price for common bar iron, with an intermediate price named for refined iron. Some iron bought for export and also some for domestic use have been canceled.

Old Material.—The period of regulation of the scrap market by the American Iron and Steel Institute and the Government is virtually ended. It has developed that contracts for this material were often loosely made or mills refused to make any contracts and business has been running along under the guidance of the Sub-Committee on Iron and Steel Scrap. Now that contracts are being canceled right and left, the committee is being appealed to in numerous cases, but has taken a position similar to that of Director of Steel Supply Replogle, in his ruling as to pig iron, which requires buyers and sellers in many cases to settle their own differences. When this seems very difficult, the committee is sometimes asked to act as arbitrator to prevent litigation, but is slow to take on such responsibilities and it will not be surprising if some of these controversies reach the courts. That the market for nearly all kinds of scrap is weak is beyond question, but we are continuing former quotations when it can not be established that transactions at lower prices have taken place. Usually when there is a decline, it is a sharp one. Wrought iron and soft steel pipe and tubes have declined \$2.50 to \$3 per ton and ungraded pipe \$6. Owing to the fact that deliveries on low phosphorus sold at Government prices are being made without complaint on the part of consumers, this material is regarded as stronger than some others, but no sales are reported. We quote for delivery in Philadelphia and near-by points as follows:

No. 1 heavy melting steel.....	\$27.00
Steel rails, rerolling.....	34.00
No. 1 low phosphorus, heavy, 0.04 and under.....	39.00
Low phosphorus, 0.04 and under.....	36.50
Low phosphorus, 0.06 and under.....	\$32.00 to 34.00
Old iron rails.....	39.00
Old carwheels.....	29.00
No. 1 railroad wrought.....	34.00
No. 1 yard wrought.....	31.00 to 31.50
Country yard wrought.....	29.00
No. 1 forge fire.....	26.00 to 27.00
Bundled skeleton.....	26.00 to 27.00
No. 1 busheling.....	31.00
No. 2 busheling.....	19.00 to 20.00
Turnings (for blast furnace use).....	18.00
Machine-shop turnings (for rolling mill use).....	18.00
Cast borings (for blast furnace use).....	18.00
Cast borings (clean).....	18.00
No. 1 cast (for steel plant use).....	29.00
No. 1 cast (cupola sizes).....	34.00
Grate bars.....	24.50 to 25.00
Stove plate.....	24.50 to 25.00
Railroad malleable (for steel plants).....	29.00
Railroad malleable (for malleable works).....	34.00
Wrought iron and soft steel pipes and tubes (new specifications).....	30.50 to 31.00
Ungraded pipe.....	22.00

Finished Material.—The action of the Sun Shipbuilding Co. in taking over the tonnage of shapes and plates canceled by the Emergency Fleet Corporation as announced in this report last week, has been received with much satisfaction by the companies which have the contracts for the material and it is hoped that other private companies will take over Government business in this way. The demand for plates for boilers and tanks and other ordinary uses is showing a gratifying increase, and plate manufacturers are becoming confident that, no matter what action is taken by the Government as to prices, there will be no reduction Jan. 1. In some cases, buyers are endeavoring to ascertain whether it is possible to shade the market, but there is very little activity of this kind and usually on such

sales as are made, the Government price prevails without question. While in the immediate Philadelphia district jobbers report business is very dull, buying by jobbers at distant points is increasing. Orders of good size have been placed for bars and other materials. As many manufacturers are not carrying any stock, they are compelled to go to jobbers and this is causing an improvement in the jobbing business. We quote plates at 3.49½c.; plain structural material, 3.24½c.; soft steel bars, 3.14½c.; common bar iron, 3.74½c.; refined iron bars, 5.24½c.; No. 10 blue annealed sheets, 4.29½c.; No. 28 black sheets, 5.24½c.; and No. 28 galvanized sheets, 6.49½c., all Philadelphia.

Buffalo

BUFFALO, Dec. 2.

Pig Iron.—Market conditions are rapidly adjusting themselves to a peace basis with the relaxing of war rules and the gradual substitution of commercial production by melters to offset the slackening in Government requirements. Consumers are taking iron in full volume regardless of whether it is on straight or allocated orders, and considerable new business is coming in for small lots for early shipment at the existing schedule of prices, with indications that new demand is likely to develop right along on satisfactory lines. A good many producers think it is likely the Government will keep underneath and support the market, with respect to sustaining the present schedule of prices for some time to come, and are consequently going ahead and meeting demand for first quarter so far as they are able. Other furnacemen, however, are inclined to wait price developments before actively soliciting for first half business. Government allocations have practically ceased. Although some improvement is reported in the shipment of coke from ovens, furnaces are still hampered by shortage in their coke supply. One of the Tonawanda furnaces of the Donner Steel Co. is continuing on production of ferromanganese and will keep on that product for three months more.

We quote the current Government schedule, f.o.b. furnace, Buffalo, as follows:

No. 1 foundry, 2.75 to 3.25 silicon.....	\$37.00
No. 2 X, 2.25 to 2.75 silicon.....	35.25
No. 3 foundry, 1.75 to 2.25 silicon.....	34.00
Gray forge.....	33.00
Malleable, silicon not over 2.25.....	34.50
Basic.....	33.00
Bessemer.....	33.20
Lake Superior charcoal, regular grades, f.o.b. Buffalo.....	38.50

Finished Iron and Steel.—A good many inquiries are coming into the market for small quantities of hot-rolled products, and mills and agencies are commencing to line up shipments against commercial orders, which, with the withdrawal of priority requirements by the Government, are now permissible. A good many jobbers are evening up their broken and shortened stocks by transferring some of their unfilled tonnage on mill books to more strictly commercial sizes. Good export demand is noted for bar material to Canada and for some of the active allies. There is also a good demand for plates. The plate mill of one of the large producers of the district which has been undergoing repairs for a few weeks will be ready to resume operations the middle of this month and will be busy for some time on accumulated orders. All shell contracts for the Allied Governments have apparently been discontinued or suspended and the only shell work being done is on United States contracts. The demand for shell discard steel has dropped off.

Old Material.—The general market is inactive and almost stagnant. Prices have sunk considerably below the level of the Government maximum schedule, being forced down by a period of no buying on the part of the mills. Practically all trading now being done is between dealers. Heavy melting steel has sagged to \$27 to \$28 on the Buffalo market owing to the lack of demand by consumers, but old orders remaining unfilled by dealers still command the Government maximum. Heavy melting steel now has to pass a much more rigid inspection than ever, however, consumers

insisting on the highest grade before accepting and rejections are becoming more numerous. Dealers are firmly inclined to believe that the period of Government control of prices will terminate Jan. 1 and that a lower era of prices will prevail after that date, also that it is likely a decrease of \$5 per ton will become effective on all grades of scrap. Buyers and sellers alike are awaiting developments in the price situation. The following scale of prices represents the actual values of scrap material to-day:

Heavy melting steel (cupola materials)	\$31.00 to \$32.00
Heavy melting steel (regular grades)	27.00 to 28.00
No. 1 low phosphorus, heavy, 0.04 and under	36.00 to 37.00
Low phosphorus, 0.04 and under	34.00 to 35.00
No. 1 railroad wrought	32.00 to 33.00
No. 1 machinery cast scrap	31.00 to 33.00
Iron axles	42.00 to 43.00
Steel axles	42.00 to 43.00
Car wheels	29.00
Railroad malleable	32.00 to 33.00
Machine shop turnings	17.00 to 18.00
Heavy axle turnings	23.00 to 24.00
Green cast borings	17.00 to 18.00
Iron rails	34.00 to 35.00
Locomotive grate bars	24.00 to 25.00
Stove plate	25.00 to 26.00
Wrought pipe	24.00 to 25.00
No. 1 busheling scrap	27.00 to 28.00
Thimble sheet stamping scrap	25.00 to 26.00

San Francisco

SAN FRANCISCO, Nov. 26.

The iron and steel trade here may be said to be marking time. The changes brought about by the cessation of hostilities in Europe and the subsequent cancellation of many Government contracts, together with the removal of all sale restrictions and regulations, have caused no serious disturbances of the industry here so far. But they have caused those interested in the trade, either as manufacturer, jobber or agent, to become cautious about the future. Jobbers find that business is practically unchanged, but a demand other than for the Government is coming, in a rather timid way, into the market. Shipments are reported easier, and the jobbers are cautiously building up their stocks. Until after the first of the year this process, however, will be very gradual, as the jobbers do not want to carry large stocks over the usual inventory period. Throughout the entire trade the statement is made that the iron and steel business will not begin to become stabilized until after the first of next year. The mills and most of the foundries have orders enough ahead to keep them busy for the next year or more, but it is said that if they are to continue indefinitely, some source of raw material other than scrap will have to be developed. The Pacific Coast has been pretty well combed for scrap, and only an occasional car from this territory is now discovered. The bulk of the scrap used here is now being brought from 1500 to 2000 miles. This supply cannot continue indefinitely, and one of the results of the war may be the development of blast furnaces and accompanying mills in this section. Such development appears absolutely necessary if iron and steel manufacture and export are to continue on the Pacific Coast.

Bars.—The supply continues adequate and no shortage is looked for in this product so long as raw material is obtainable.

Structural Steel.—While no large buildings have been officially announced to begin construction at once, it is believed in real estate circles that next year will see great activity in San Francisco and other large cities in the way of buildings using structural material. Several of these buildings are to be built immediately after the first of the year, according to report.

Plates.—The jobbers say that plates are coming in more freely and that their stocks are being rounded out. No falling off in demand is noted.

Sheets.—The market for sheets outside of Government business has been unsatisfied for some time, and the stocks which are now coming in more freely than for months are expected to pass rapidly to consumers.

Jobbers' stocks of sheets were more depleted than those of any other material.

Wrought Pipe.—Considerable activity is looked for in all tubular goods after the first of next year. Jobbers are ordering rather freely, but not greatly in excess of their immediate demand. While there will be a change in the use to which tubular goods is put, it is not expected that the coming peace will see any falling off in the demand in this market.

Cast-Iron Pipe.—It is too early for much demand to have developed for cast pipe, which is used largely in municipal plants. A good many municipalities have already voted bonds for water system improvements, but have not yet floated these bonds. The sale of these bonds and of those yet to be voted in other municipalities is expected to bring about a brisk demand for cast pipe.

Pig Iron.—Pig iron continues scarce, and the foundries and mills are still ordering for future delivery on priority order blanks as they did before the armistice was signed. This action is taken in the belief that preference will be given where the necessity of haste or the importance of the order is shown. It is believed here that the cancellation of many Government orders will make the pig-iron market easier in the East in a few weeks, but whether this condition will extend here is a question. Before the war a great part of the pig iron used here came by water from European points. This source is shut off and will be for some time. Little will come from the East coast here by ship on account of the scarcity of shipping. While some jobs can stand the cost of shipment overland, a great many cannot, and the foreign market can never be supplied from Pacific Coast ports, which have had to pay land freight from the East to the point of shipment. For these reasons a normal pre-war market for pig iron is not looked for here for a long time.

Coke.—The coke situation continues to grow easier. Supplies are now being shipped in from Illinois and Missouri. All fear of a coke shortage is now passed.

Old Material.—The scrap situation continues unchanged. Emory E. Smith, who has charge of iron and steel scrap on the Pacific Coast, has apparently made arrangements for a sufficient supply to flow steadily to this market. However, there is no surplus being built up, and a cessation of shipments for a comparatively short time might do incalculable harm. We quote prices of scrap, per gross ton, as follows:

Scrap steel for cupola use	\$34.00
First grade iron (machinery, railroad, agricultural)	34.00
Second grade (brake shoes)	33.00
Third grade (clean broken stove plates)	28.00
Fourth grade (grate bars, acid scrap, free from burnt iron)	20.00

Birmingham

BIRMINGHAM, ALA., Dec. 2.

Pig Iron.—The tone of the Southern iron market has taken on increasing firmness with the cessation of cancellations, growing activity of inquiry and sales for first half of 1919 in a widely scattered area. The few stop orders that continue to come in amount to little in volume and are almost invariably where the Government has withdrawn its orders for finished product. The week's allocations were numerous, but for small lots—50 to 200 tons. Pipe works remain in a waiting attitude. Among the allocations finally booked the past week were 8000 tons of foundry for this year and 9000 tons for 1919 for Italy. One furnace interest has recently sold around 10,000 tons for first half delivery and booked one small consumer for the entire year. All interests feel free to sell into 1919, but, as there is no anxiety on either side, this business has not yet attained great volume. The inquiry for export is especially active—France, Italy and Japan being represented. One maker booked 1000 tons for Japan, the purchasers to furnish the shipping room. The Woodward Iron Co. will blow in its idle Vanderbilt stack in the very near future and will then have five active furnaces, three on basic and two on foundry. The general disposition is to

sit steady, with the expectation of at least price maintenance, the majority of furnace men seeming inclined to believe that, although there might be a slight decline in price upon the removal of Federal regulation, it will be followed by advancing prices. It is a rather deliberate market, both at the selling and purchasing end, with the latter becoming more interested with the passage of each week. Furnace practice has not improved and labor is still scarce and indifferent, more indifferent than scarce. Returning soldiers are expected to put more ginger into individual workers by reason of competition. Foundry and machine-shop operations are apparently as large as during the war. We continue to quote, per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry and soft.....	\$34.00
Basic	33.00

Cast-Iron Pipe.—The water and sanitary pipe trades are in a waiting mood. Some Government requisitions have been canceled, with little to take their place. The leading interest booked several orders for steel-mill structural work during the week, and natural gas and oil fields are inquiring for a considerable tonnage. More certainty as to future prices must be manifest before large business is transacted. The Holt plant of the Central Foundry Co. has closed for an indefinite period on account of unsettled conditions.

Coal and Coke.—The coal output has improved, the production of the past week having been 358,000 tons, an increase over the preceding week of 30,000 tons. There is still much influenza, and it seems impossible to get a full week's work out of the men enjoying the present high wages. Out of 150 idle men at a colliery one day recently only 50 gave excuses for idleness; the others none. As a result furnaces find difficulty in securing an adequate amount of coke. Foundries are fairly well supplied.

Old Material.—Consumers, having fair stocks on hand, remain in a waiting attitude and fail to respond even to the lower price schedule. Dealers are delivering on old contracts and getting the new stock at lower schedules but there is no fixed price. We quote, per gross ton, f.o.b. Birmingham district yards, as follows:

Old steel axles	\$33.00 to \$37.00
Old steel rails	25.00 to 26.00
Heavy melting steel	22.00 to 23.00
No. 1 railroad wrought.....	25.00 to 26.00
No. 1 cast	24.00 to 25.00
Old carwheels	24.00 to 25.00
Tram carwheels	23.00 to 24.00
Machine-shop turnings	15.00 to 16.00
Cast-iron borings	14.00 to 15.00
Stove plates	20.00 to 22.00

St. Louis

ST. LOUIS, Dec. 2.

Pig Iron.—Consumers, still lacking a foundation upon which to take action, are awaiting developments before entering into new engagements, except in so far as they seek allocations to continue operations on uncanceled contracts for Government supplies. Although no domestic business of consequence is appearing, there is general confidence that there will be plenty to do when the war work is finally disposed of, but there is a desire to get closer to the ultimate peace prices of pig iron before placing any contracts. The furnace representatives have not been authorized to seek any business of consequence, and so both sides are waiting. The usual small special lots continue to be offered.

Coke.—The easier condition in coke, previously noted, still prevails, with but little business reported, owing to the fact that consumers are reasonably well supplied and are not inclined to place any orders until the situation is more definitely cleared. By-product producers are so well contracted ahead that they have nothing to offer save as customers ask for the withholding of shipments, but this has not yet amounted to enough to affect the market.

Finished Iron and Steel.—Relief in the receipt of supplies has not yet been sufficient to alter the situation materially, and deliveries from warehouse, the only available source of supplies for the present, are still

far behind. Consumers are beginning to take on new interest with the removal of restrictions on building, and further activity is anticipated. For stock out of warehouse we quote as follows: Soft steel bars, 424c.; iron bars, 450c.; structural material, 434c.; tank plates, 459c.; No. 8 sheets, 554c.; No. 10 blue annealed sheets, 559c.; No. 28 black sheets, cold rolled, one pass, 659c.; No. 28 galvanized sheets, black sheet gage, 784c.

Old Material.—Dealers and consumers continue to avoid commitments of any size. The market has now been demoralized for three weeks. Some small buying is reported here and there to cover immediate needs, but there are not enough transactions passing to base definitely reliable quotations on. The figures given, therefore, are but estimates of value.

Per Gross Ton

Old iron rails.....	\$34.00 to \$34.50
Old steel rails, rerolling.....	30.50 to 31.00
Old steel rails, less than 3 ft.....	28.00 to 28.50
Relaying rails, standard sections, subject to inspection.....	55.00 to 65.00
Old carwheels	28.50 to 29.00
No. 1 railroad heavy melting steel scrap	27.00 to 27.50
Heavy shoveling steel.....	24.50 to 25.00
Ordinary shoveling steel.....	24.00 to 24.50
Frogs, switches and guards, cut apart	27.00 to 27.50
Ordinary bundled sheet scrap.....	21.50 to 22.00
Heavy axle and tire turnings.....	18.00 to 18.50

Per Net Ton

Iron angle bars.....	\$29.50 to \$30.00
Steel angle bars.....	25.00 to 25.50
Iron car axles.....	39.00 to 39.50
Steel car axles.....	39.00 to 39.50
Wrought arch bars and transoms.....	39.00 to 39.50
No. 1 railroad wrought.....	27.00 to 27.50
No. 2 railroad wrought.....	26.00 to 26.50
Railroad springs	25.50 to 26.00
Steel couplers and knuckles.....	27.00 to 27.50
Locomotive tires, 42 in. and over, smooth inside	32.00 to 32.50
No. 1 dealers' forge.....	20.50 to 21.00
Cast iron borings.....	15.00 to 15.50
No. 1 bushing.....	24.00 to 24.50
No. 1 boilers cut to sheets and rings.....	16.00 to 16.50
No. 1 cast scrap.....	24.00 to 24.50
Stove plate and light cast scrap.....	18.00 to 18.50
Railroad malleable	25.50 to 26.00
Agricultural malleable	22.00 to 22.50
Pipes and flues.....	20.00 to 20.50
Heavy railroad sheet and tank scrap.....	18.00 to 18.50
Railroad grate bars.....	17.00 to 17.50
Machine shop turnings.....	15.75 to 16.25
Country mixed scrap.....	18.00 to 18.50
Uncut railroad mixed scrap.....	19.50 to 20.00
Horseshoes	25.50 to 26.00

New York

NEW YORK, Dec. 3.

Pig Iron.—Transactions in pig iron for export are surrounded by no little uncertainty, but it is understood that an Eastern steel company has sold 33,000 tons of Bessemer in two lots of 14,000 and 19,000 tons and that a South American house has booked from 500 to 1000 tons for export to one of the South American republics. The market is extremely quiet, but little is heard of cancellations or attempts to shade the price. Buyers are in a waiting attitude and it is not expected that orders of any considerable size will be placed until after Jan. 1. We quote prices as follows for tidewater delivery for Northern and Southern grades up to Jan. 1, 1919:

No. 1 X, silicon, 2.75 to 3.25.....	\$41.30
No. 2 X, silicon, 2.25 to 2.75.....	39.55
No. 2 plain, silicon, 1.75 to 2.25.....	38.30
No. 2 X Virginia, silicon, 2.25 to 2.75.....	42.95
No. 1 Southern (all rail).....	43.20
No. 2 Southern (all rail).....	41.70

Ferroalloys.—The market for both ferromanganese and spiegeleisen continues very quiet. While the quotation for ferromanganese is still \$250, delivered, for 70 per cent alloy, it is believed that resale material can be secured under this level, though no such transactions are reported here. An inquiry for a fair amount of spiegeleisen for moderately early delivery is noted. The 50 per cent ferrosilicon market is quiet at \$145 to \$150 on contract with spot delivery held at \$152.50 to

\$160 per ton. Ferrochrome is quoted at 35c. to 37c. per lb. of contained chromium for the grade containing 4 to 6 per cent carbon, with 32c. to 34c. per lb. asked for that having 6 to 8 per cent carbon. Ferrotungsten is now quoted at about \$2.40 per lb. of contained tungsten, New York, with the ore concentrates quoted nominal at between \$17 to \$22 per unit in 60 per cent material. We quote ferrovanadium at \$4 to \$5, Pittsburgh, per lb. of contained vanadium for prompt delivery in small lots. Ferro-carbon-titanium, 15 to 18 per cent, is selling at \$200 per net ton in carload lots, at \$220 per ton in lots between one ton and a carload, and at \$250 per ton in lots less than a ton, f.o.b. Suspension Bridge, N. Y.

Cast-Iron Pipe.—The market is extremely quiet and no business of importance is in prospect, although it is hoped that some municipal projects will soon develop. Government prices are \$67.70, New York, for 6-in. and heavier; \$70.70 for 4-in., \$77.70 for 3-in., and \$1 additional for Class A and gas pipe.

Old Material.—Cancellations are still coming in and prices are receding. The Government appeared as a factor in the market last week in selling a considerable tonnage of various grades of scrap collected at the Brooklyn Navy Yard. Steel scrap in very large pieces was sold at \$21.78, but as the material will require much cutting, it cannot be classified as heavy melting steel. The price for heavy melting steel is, however, very little higher than that obtained by the Government and ranges from \$22 to \$23, New York. The Government sold galvanized pipe at \$15.80 and grate bars at \$22.78. Cast material is lower. Quotations given below on axles, No. 1 railroad wrought cut to no less than 10-in. or over 24 in., No. 1 yard wrought long, malleable cast and old car wheels are nominal. We quote buying prices of dealers and brokers, per gross ton, New York, as follows:

Heavy melting steel.....	\$22.00 to \$23.00
Rolling rails	28.00 to 29.00
Relaying rails	58.00 to 60.00
Iron and steel cars axles.....	43.40
No. 1 railroad wrought.....	30.00 to 30.50
No. 1 railroad wrought, cut to not less than 10 in. or over 24 in....	35.00 to 36.00
Wrought-iron track scrap.....	27.50 to 28.50
Forge fire	21.50 to 22.00
No. 1 yard wrought, long.....	27.00 to 28.00
Light iron	7.00 to 8.00
Cast borings (clean).....	15.00 to 16.00
Machine shop turnings.....	15.00 to 16.00
Mixed borings and turnings.....	15.00 to 16.00
Iron and steel pipe (1 in. minimum diameter), not under 2 ft. long....	26.00 to 27.00
Stove plate	22.00 to 23.00
Locomotive grate bars.....	22.00 to 23.00
Malleable cast (railroad).....	29.00 to 30.00
Old carwheels	25.00 to 26.00

Prices which dealers in New York and Brooklyn are quoted to local foundries, per gross ton, are:

No. 1 machinery cast.....	\$30.00 to \$31.00
No. 1 heavy cast (columns, building materials, etc.), cupola size.....	29.00 to 30.00
No. 1 heavy cast, not cupola size....	23.00 to 24.00
No. 1 cast radiators, cast boilers, etc.....	25.00 to 25.50

Finished Iron and Steel.—Current export business, particularly in plates and bars, is being done generally at higher than the present maximum prices. About 500 tons of plates has been sold for Italy at 5c. per lb. and fair amounts of soft steel bars have brought 3.50c. One inquiry for foreign shipment involves about 3500 tons of shipbuilding material and as high as 5.50c. has been offered, but it is understood that this has not yet been closed. Export inquiries are numerous, but in many cases it is believed these are put out to test the situation. An interesting report is that a large Italian company in New York has put out inquiries for 200,000 tons of plates and shapes for building ships in Italy for the Italian Government. It is understood, however, that consummation of this project will not be reached until a representative of Italian shipbuilding interests now in this country has returned to Italy. Very little domestic inquiry has appeared, consumers apparently awaiting developments as to control of steel prices after Jan. 1. One large oil producer has been asking for prices on several thousand tons of material for various operating purposes, indicating possibly expansion in

equipment, and this is true of two or three other domestic companies. Among producers the general feeling seems fairly optimistic as to the demand that will develop as soon as the present period of uncertainty is over. Automobile builders are more active in seeking bars and other material, as well as alloy steel. The structural market is extremely quiet, there having been no decisions on the various bids recently asked for and noted in this column. A new inquiry is for 300 to 400 tons for Government work at the Portsmouth Navy Yard, bids on which are scheduled for Dec. 9. Bids have been asked for Dec. 16 on steel for an alternative design for the wireless towers at Monroe, N. C., which were intended to be built largely of brick with only 500 tons of steel originally required. The new plan would mean 12,000 to 13,000 tons. We quote mill shipments as follows: Steel bars, 3.17c.; shapes, 3.27c.; plates, 3.52c.; common bar iron, 3.77c., and refined bar iron, 5.27c., all New York. Out-of-store prices are 1c. higher.

British Steel Market

American Basic Iron for 1919—Removal of Subsidies—Fixed Price for Tin Plate

(By Cable)

LONDON, ENGLAND, Dec. 4.

Restrictions are being relaxed and large domestic and export inquiries for iron and steel are appearing, but actual bookings are not remarkable because much hesitation is apparent. The allocation system for foundry pig iron has been abandoned, but priority certificates are still required and fixed prices are retained, with makers unwilling to book business far ahead. The tin-plate sliding scale prices have been abolished and the price has been fixed at 32s. 6d. net basis, free on track for home consumption and the Allies, with other markets at open prices but subject to licenses to ship. Sheet and tin-plate bars have been fixed at £10 15s. after Jan. 1, but in addition buyers are to pay 16s. per ton to the government to compensate for steel subsidies. Small export orders have been taken for galvanized sheets at £30 10s., basis, f.o.b.

It is reported that an importation of 1,000,000 tons of American basic pig iron is contemplated next year. Government subsidies are to be removed in two stages. Those applicable to steel will be removed Jan. 31, when revised prices will take effect, and those on pig iron are to continue until April 30, when all subsidies will cease. This will involve further readjustment then. New export prices on pig iron are now being prepared, also export prices on bar iron, both applicable at once.

Cincinnati

CINCINNATI, Dec. 3—(By Wire).

Pig Iron.—The furnaces in southern Ohio make very optimistic statements as to the future, but these are not reflected in any new contracts for either first or second quarter shipment of iron. Reports from the South through selling agencies are also of an encouraging nature, but existing conditions apparently do not warrant any predictions for a change within the near future. One feature that is slightly encouraging concerns the diminishing number of requests to cancel contracts, although these have not ceased to be sent and now include practically every grade of iron with the exception of basic, which seems to be going forward on contracts without interference from melters. The inquiry has been cut off entirely and no new business is expected until after the holiday season. Much speculation is indulged in as to whether Government prices will be continued after Jan. 1 and also as to what would result in the lifting of all restrictions. Some leading firms state they would be reluctant to sell short any iron for either first or second quarter delivery at the

present maximum price. The argument made is that stocks are so scanty that no matter what happens the furnaces will be able to hold their own even should they be compelled to pile some iron at present production costs. The situation is one that puzzles both producers and consumers, as well as selling agencies, and to sum the matter up briefly, the market is a waiting one. There are no indications at the present time that the pig iron market will follow scrap, which is now very weak. Although cancellation requests are few, hold up orders are on the increase.

Based on freight rates of \$3.60 from Birmingham and \$1.80 from Ironton, we quote, f.o.b. Cincinnati:

Southern coke, No. 1 f'dry and 1 soft.....	\$38.85
Southern coke, No. 2 f'dry and 2 soft.....	37.60
Southern coke, No. 3 foundry.....	37.10
Southern No. 4 foundry.....	36.85
Southern gray forge.....	36.60
Ohio silvery, 8 per cent silicon.....	49.30
Southern Ohio coke, No. 1.....	37.65
Southern Ohio coke, No. 2.....	35.80
Southern Ohio coke, No. 3.....	35.30
Southern Ohio malleable Bessemer.....	36.30
Basic Northern.....	34.80
Standard Southern carwheel.....	54.60

Finished Material.—Jobbers report that orders now received are generally of such a nature that they should be turned over to retail establishments. For instance, firms that formerly ordered wire nails and barbed wire by the carload are now buying these in drayload lots. There is no disposition on the part of anyone to make contracts ahead, the general tendency being to only carry sufficient stocks to fill urgent orders. Attention has previously been called to the very small stocks held by the warehouses and by the retail dealers, and this is one feature of the situation that encourages the belief that the jobbers will be able to take up the slack to a certain extent after the future is better defined. Much interest centers on the coming conference of representatives of the Government and the American Iron and Steel Institute to decide on fixing prices for next year. Quite a number of cancellations have been made by firms who had in hand Government contracts which were previously canceled by some branch of the War Department. Specifications for steel pipe are very satisfactory and this represents about the only item on which a favorable report can be made this week.

The following are local jobbers' prices: Steel bars and small structural shapes, 4.13c. base; large round and squares 2 in. and over, 4.23c. base; plates, 4.48c. base; No. 10 blue annealed sheets, 5.48c.; steel bands, 3/16 in. and lighter, 4.98c. base (using the new band list). Reinforcing concrete bars, 4.25½c., and wire nails, \$4.23 per keg base.

Old Material.—Practically all scrap dealers are pessimistic, principally on account of cancellations received that not only cover machine cast scrap but also steel scrap. All prices quoted now are nominal, as there is a growing tendency to wait until after the end of the year before accumulating further stocks. As a rule all cancellation requests are granted, because it is realized that the melters under the changed conditions are not able to use the metal. The following are buying market prices, f.o.b. cars Cincinnati and southern Ohio, in carload lots:

Per Gross Ton	
Bundled sheet scrap.....	\$17.00 to \$18.00
Old iron rails.....	28.50 to 29.00
Relaying rails, 56 lb. and up.....	44.50 to 45.00
Rerolling steel rails.....	28.50 to 29.00
Heavy melting steel scrap.....	25.50 to 26.00
Steel rails for melting.....	24.00 to 24.50
Old carwheels.....	25.00 to 25.50
Per Net Ton	
No. 1 railroad wrought.....	\$23.00 to \$23.50
Cast borings.....	11.00 to 11.50
Steel turnings.....	11.00 to 11.50
Railroad cast.....	23.00 to 23.50
No. 1 machinery.....	25.00 to 25.50
Burnt scrap.....	16.00 to 16.50
Iron axles.....	35.00 to 35.50
Locomotive tires (smooth inside).....	28.00 to 28.50
Pipes and flues.....	17.00 to 17.50
Malleable cast.....	20.00 to 20.50
Railroad tank and sheet.....	14.00 to 14.50

Coke.—As practically all foundries are well covered, there is very little contracting for future shipment. Quite a number of requests have been received lately to hold up shipments of coke due in December by foundries making a specialty of machine-tool castings. As

production in most districts is not up to standard, due to the reappearance of influenza, none of this coke has been thrown on the market. The last month of the year is generally a dull one, and on account of many cancellations and hold-ups received from different sources, the foundries are not consuming as much fuel as in former years. The consumption of furnace coke in November probably showed a little increase over the previous month. Shipments from all districts are satisfactory.

Cleveland

CLEVELAND, Dec. 3.—(By wire).

Iron Ore.—The ore shipping season closed with a total lake movement of 61,156,732 gross tons. The November movement was 4,279,025 tons as compared with 7,331,804 tons in November of last year. Only one cargo of 6836 tons was shipped in December as compared with over 900,000 shipped in that month during the two previous years. The movement was curtailed during the latter part of the season to divert boats to the grain trade, a number of consumers agreeing to have some of their ore carried over until next year. However, as the requirements were figured on a war time basis, there is no question but that all consumers will have an ample supply of ore to last them until next season.

Old range Bessemer, \$6.65; old range non-Bessemer, \$5.90; Mesaba Bessemer, \$6.40; Mesaba non-Bessemer, \$5.75.

Pig Iron.—Sales of a few lots of foundry iron for early shipment are reported, but consumers generally are showing no inclination to buy for the first half. A little inquiry has come out for foundry grades for that delivery, but this has not resulted in the placing of orders. At least one consumer who came in the market declined to place a contract at the usual terms that will hold him to the last Government price in case regulation is removed, but asks that in the event of a discontinuance of Government control of prices the buyer and seller are to mutually agree on the price. A few sellers both of Northern and Southern grades are showing some anxiety to fill up their order books at the present Government price. Requests to cancel contracts or to hold up shipments have not been as numerous as some producers expected and this is attributed partly to the fact that many consumers have not yet had their own Government orders canceled. Some producers, particularly in the South, did not write contracts with consumers after Government allocations and the question has been raised as to whether this iron can be canceled. However, it is believed that in these cases there have been confirming letters which doubtless will be regarded as binding as formal contracts. A few small lot sales of silvery iron for early delivery are reported.

The Government discontinued Nov. 30 sending allocation orders for pig iron to the pig iron committee. This committee has a number of allocation orders from the Government which have not yet been disposed of, but this iron will be distributed in the next few days and the work of the committee in allocating iron will be finished. During the week 22,000 tons of pig iron was allocated, about 17,000 tons of which was for the first half. Allocations include 2000 tons of Bessemer iron for this year, 2900 tons of low phosphorus iron mostly for next year, 16,700 tons of foundry iron, 14,000 tons of which was in several lots for the first half, and 300 tons of silvery iron. Iron previously allocated to the amount of 3600 tons was canceled. Total allocations since the committee started its work May 1 were 1,866,000 tons. Ferroalloys are inactive. One sale of 200 tons of Bessemer ferrosilicon for delivery in the northern Ohio territory is reported. We quote delivered Cleveland as follows:

Bessemer.....	\$36.60
Basic.....	33.40
Northern No. 2 foundry.....	31.40
Southern No. 2 foundry, silicon, 2.25 to 2.75.....	40.25
Gray forge.....	32.40
Ohio silvery, 8 per cent silicon.....	49.90
Standard low phosphorus, Valley furnace.....	53.00

Coke.—Foundry coke is being shipped faster than wanted by consumers, most of whom have large stocks.

and some have asked the ovens to suspend shipments. The influenza epidemic is still affecting production in the Connellsville district and some blast furnaces are having trouble in getting a sufficient supply of furnace coke.

Bolts, Nuts and Rivets.—Many inquiries are coming out for bolts and nuts for export. It is believed that in many cases these are revivals of inquiries that were held up because of the embargo placed on export shipments on account of the war. A few sales for export are reported at regular prices. New domestic business is rather light. There is practically no new inquiry for rivets, but manufacturers are filled with orders from shipyards that will keep them busy for several months.

Old Material.—Activity is confined to trading between dealers who are covering on old orders, mostly in heavy melting steel and borings and turnings. Sales of heavy melting steel are being made at \$28 to \$28.50 per gross ton, but some dealers are offering only \$27.50 for that grade. There is apparently a wide spread in quotations on borings and turnings, ranging from \$17.50 to \$18.50. No inquiry for any grade is reported from consumers. Dealers say that they would not sell heavy melting steel to mills at less than the Government price of \$29, but admit that they do not believe that consumers would pay this price. The ruling quotations are not bringing out a great deal of material. Low phosphorus scrap continues weak and shipments of much of this material have been held up. Some additional cancellations of material not delivered according to contracts are reported. We quote prices at consumers' yards in Cleveland and vicinity as follows:

Steel rails	\$28.00 to \$29.00
Steel rails, under 3 ft.	32.00 to 33.00
Steel rails, rerolling	33.50 to 34.00
Iron rails, nominal	39.00
Iron car axles, nominal	46.50
Steel car axles, nominal	46.50
Heavy melting steel	28.00 to 28.50
Cast borings	17.50 to 18.00
Iron and steel turnings and drillings ..	17.50 to 18.00
Compressed steel scrap	26.00 to 26.50
No. 1 railroad wrought	32.00 to 33.00
Cast iron car wheels, unbroken, nominal ..	39.00
Cast iron car wheels, broken, nominal	34.00
Agricultural malleable	26.00 to 27.00
Railroad malleable	32.00 to 33.00
Steel axle turnings	22.00 to 22.50
Light bundle sheet scrap, nominal	24.50 to 25.00
Cast iron scrap	27.00 to 27.50
Cast iron scrap, broken to cupola size	31.50 to 32.50
No. 1 bushing	26.75 to 27.00
Railroad grate bars, nominal	25.25 to 25.75
Stove plate, nominal	25.25 to 25.75

Finished Iron and Steel.—The steel industry is awaiting development in respect to the possible removal of price regulation and buying is limited in volume. However, considerable miscellaneous inquiry is coming from consumers who are seeking information as to what they can do in the way of securing material. There is also considerable export inquiry for all kinds of material, little of which has resulted in orders. Some of these are apparently a revival of inquiries that were pending when the embargo on exports was declared. The present demand is almost wholly for small lots of material for early shipment. The automobile industry so far is the only one that is showing a great deal of activity, although the implement trade is asking for steel on contracts. Liberal specifications are coming on old orders from both builders of automobile and makers of parts, specifications being changed to meet present commercial requirements. As a result of cancellation of Government orders, a Cleveland mill is now offering sheet bars for prompt shipment. Forging bars, for which some inquiry is coming out, are easier and are being offered for December shipment. Cancellations and suspensions of contracts have slowed down materially. The plate situation has eased up and on an inquiry for a 500-ton lot, one mill was able to promise shipment in a week. Orders for small lots of light plates and heavy sheets are plentiful, and some inquiry is coming out for plates for extended delivery. Some orders for fabricated ship work with Ohio shops are being canceled, it being the apparent intention of the Government now that the urgency of the situation is passed, to have this work done where the long railroad hauls will be eliminated. Better deliveries in sheets

are promised with the release of shell steel tonnage. One Valley mill is now taking uncancellable sheet contracts for delivery over two or three months and subject to the last Government price, should price regulation be removed. Wire fence is in good demand, but jobbers generally are buying sparingly and warehouse business is very light.

Steel bars, 4.67c.; plates, 4.42c.; structural material, 4.17c.; No. 10 blue annealed sheets, 5.42c.; No. 29 black sheets, 6.42c.; No. 28 galvanized sheets, 7.67c.

IRON AND STEEL STOCKS

Security Values Show Increasing Strength in Sympathy with Rise in Rails

Improved sentiment in railroad circles, based on the belief that a reasonably early return of railroad properties to their owners is in prospect, caused important advances in railroad stocks, with a sympathetic upward movement in iron, steel and equipment stocks. This movement was not clearly defined until after Thursday, at which time the depressing influences operating on previous days apparently ran their course and gave way to more cheerful conditions.

The range of prices on active iron and industrial stocks from Tuesday of last week to Wednesday of this week was as follows:

Allis-Chalm. com. 25 1/4 - 27 1/4	Int. Har. pf. 114 1/4
Allis-Chalm. pf. 80 1/4 - 81 1/2	Lackaw. Steel .. 67 1/2 - 70 1/2
Am. Can. com. 41 1/2 - 46 1/2	Lake Supr. Corp. 16 1/2 - 18
Am. Can. pf. 95 - 96 1/4	Midvale Steel .. 42 1/2 - 44 1/2
Am. Car & F. c. 79 1/4 - 84 1/4	Nat. Acme
Am. Car & F. pf. 109	Nat. En. & S. c. 41 - 45 1/4
Am. Loco. com. 58 1/4 - 62	Nat. En. & S. pf. 91
Am. Loco. pf. 102 - 102 1/2	N. Y. Air Brake 101 1/2 - 107
Am. Radiator com. 122	Pittsb. Steel pf. 91 1/4
Am. Ship com. 102 - 111	Pressed Steel c. 58 - 59
Am. Steel Fdries 87 - 90 1/4	Ry. Steel Spg. c. 69 - 72 1/4
Bald. Loco. com. 70 1/4 - 75 1/4	Republic com. 73 - 76 1/4
Beth. steel com. 62 1/4 - 65 1/4	Republic pf. 99 1/4
Beth. Stil. Cl. B. 61 1/2 - 66 1/2	Sloss com. 45 1/4 - 46
Central Fdry. com. 18	Superior Steel .. 36 - 36 1/2
Chic. Pneu. Tool. 64 - 66	Supr. Steel 1st pf. 95
Colo. Fuel	Un. Alloy Steel .. 38 1/4 - 39 1/4
Cruible Steel c. 53 1/4 - 58	U. S. Pipe com. 13 1/4 - 14
Gen. Electric .. 148 1/4 - 154 1/4	U. S. Steel com. 94 - 100 1/4
Gr. No. Ore Cart 31 - 33 1/2	U. S. Steel pf. 111 1/4 - 113 1/4
Gulf States Steel. 64 1/2 - 68	Va. L. C. & Coke 58 - 59
Int. Har. com. 112 - 114 1/4	Westingh. Elec. 41 1/4 - 43 1/4

Dividends

- The National Enameling & Stamping Co., quarterly, 1% per cent on the preferred, payable Dec. 31.
- The Republican Iron & Steel Co., quarterly, 1 1/2 per cent on the common, payable Feb. 1, and 1 1/4 per cent on the preferred, payable Jan. 2.
- The American Can Co., quarterly, 1% per cent on the preferred, payable Jan. 2.
- The Baldwin Locomotive Works, 2 1/2 per cent, payable Jan. 1.
- The Carbon Steel Co., quarterly, 2 per cent and extra 3 per cent on the common, payable Jan. 15, 4 per cent on the first preferred, payable March 31, and annual 6 per cent on the second preferred, payable July 30.
- The Interstate Iron & Steel Co., quarterly, 1 1/4 per cent on the preferred, payable Dec. 1.
- The Railway Steel Spring Co., quarterly, 2 per cent on the common, payable Dec. 20, and 1 1/4 per cent on the preferred, payable Dec. 20.
- The Worthington Pump & Machinery Corporation, quarterly 1% per cent on the preferred A and 1 1/2 per cent on preferred B, payable Jan. 2.

Season's Lake Ore Movement

The iron-ore movement by water from the Lake Superior region during the season just closed was 61,156,732 gross tons, a decrease from last year of 1,342,169 tons. With the all-rail shipments, which will not be known until the close of the year, the movement for the season will be close to 63,000,000 tons. The November shipments fell off sharply as compared with the corresponding month a year ago amounting to only 4,279,025 tons. Only one cargo of 6836 tons was moved in December, this last shipment being made Dec. 1 from Escanaba.

The Fabricated Steel Products Co., New York, has leased offices in the City Investing Building for new local headquarters.

Metal Markets

The Week's Prices

Copper, New York		Tin, New York		Lead		Spelter	
Lake	Electrolytic			New York	St. Louis	New York	St. Louis
Nov. 27.....	26.00	26.00	70.00	8.05	7.75	8.65	8.30
29.....	26.00	26.00	70.00	8.05	7.75	8.65	8.30
30.....	26.00	26.00	.....	8.05	7.75	8.65	8.30
Dec. 2.....	26.00	26.00	70.00	7.05	6.75	8.60	8.25
3.....	26.00	26.00	70.00	7.05	6.75	8.60	8.25

NEW YORK, Dec. 4.

Most of the markets are still under control. There is very little change in the copper situation. The tin market is under control except as to resale metal. Lead has been unexpectedly reduced. Spelter is quiet but steady. Antimony is firm.

New York

Copper.—The unexpected reduction of the fixed price of lead on Monday from 8.05c., New York, to 7.05c., has caused serious thought as to the future price of copper. The lead price was voluntarily fixed by the Lead Producers' Committee and voluntarily reduced. The copper price of 26c. is to stand until Jan. 1 but whether it will be reduced, maintained or left an open market by the Government, under whose control it has been, is the unsettling factor. Consensus of opinion points to an open market. The labor phase of the problem is an important consideration. Casting copper, made from scrap copper, the supply of which is abundant, is selling as low as 23c. to 23.50c. per lb. Sales of electrolytic or Lake copper, under 26c. before Jan. 1, would be contrary to agreement and such sales have probably been small if any. As to cancellations it is an old rule in copper circles that these are never recognized, a sale being a sale. New business is light, consumers awaiting developments.

Tin.—Announcement was made yesterday by the War Industries Board that the price of tin, as allocated by the Inter-Allied Tin Executive to the United States Steel Products Co. for distribution at cost to American consumers, would be 72.50c. per lb. ex-dock or store, port of New York or Chicago, or f.o.b. delivery points at Chicago and points East and 71.25c. per lb. ex-dock or store Pacific Coast ports, both at seller's option. These prices are for shipment during the months of December, 1918, and January, 1919, and refer to lots of 25 tons or over on one purchase. Dealers or jobbers may resell in lots of 5 gross tons and over to consumers or jobbers holding purchase licenses from the War Industries Board at a gross profit not to exceed 2½ per cent and in lots less than 5 tons at a gross profit of not to exceed 5 per cent. Resale metal has sold at 70c. to 70.50c., New York, recently which is the quotation. Australian tin has been offered at 63c., San Francisco, but importations are not permissible except by the United States Steel Products Co. Receipts of tin in November were sensationally low, having been only 2380 tons of which 2245 tons came in at Pacific ports. This compares with average deliveries in the 10 months previous to November of 5191 tons per month.

Lead.—On Monday the Lead Producers Committee announced a reduction in the price of lead of 1c. per lb., making it 6.75c., St. Louis, or 7.05c., New York. This came as a distinct surprise as supplies had been supposed tight. The London market was removed from control last week and the price advanced £11 per ton. The market is still under control but conditions are evidently easier.

Spelter.—Demand, particularly from galvanizers, is fair but the lowering of the price of lead has had an unsettling effect on this market. For December or early delivery the quotation for prime Western is 8.25c., St. Louis, or 8.60c., New York, with prompt held at 8.40c., St. Louis, or 8.75c., New York. The weekly

Government report of stocks and production as of Nov. 23 showed both to have advanced slightly over 600 tons.

Antimony.—The market is quiet and steady at 8.50c. to 8.75c., New York, duty paid, for wholesale lots for early delivery.

Aluminum.—Government maximum prices remain unchanged for No. 1 virgin metal or for scrap at 33c. per lb. for 50-ton lots; 33.10c. per lb. for 15 to 50-ton lots and 33.20c. per lb. for 1 to 15-ton lots. The metal is, however, being more fully released for domestic uses.

Old Metals.—Very few consumers are in the market and then only for immediate needs. Dealers' selling prices are nominally as follows:

	Cents Per Lb.
Copper, heavy and crucible.....	25.00
Copper, heavy and wire.....	23.50
Copper, light and bottoms.....	20.00
Brass, heavy.....	15.50
Brass, light.....	11.00
Heavy machine composition.....	23.00
No. 1 yellow rod brass turnings.....	12.00
No. 1 red brass or composition turnings.....	20.00
Lead, heavy.....	7.25
Lead, tea.....	5.50
Zinc.....	6.00

Chicago

DEC. 3.—Lead has been reduced 1c. below the agreed price. Tin is unsettled, the attempts to regulate prices apparently having pleased no one and left consumers in a tight place. Views as to the future are greatly at variance. Some consumers are endeavoring to sell metal bought at high prices, while others predict an advancing market. Copper is quiet. Spelter, though quiet, is a shade higher. December is expected to be a slow month in all metals, especially lead. Considerable antimony has been taken at the present level and the consumption is good. We quote copper at 26c. for carloads and 27.30c. for part carloads; tin, 75c. to 77c.; lead, nominal at 6.85c. in carloads; 7.35c. per pound for 1 to 25 tons and 7.60c. per pound for less than 1 ton; spelter, 8.50c. to 8.62½c.; antimony, 10.50c. to 11c. On old metals we quote copper wire, crucible shapes, 18.49½c.; copper clips, 16.50c.; copper bottoms, 15c.; red brass, 16.50c.; yellow brass, 11c.; lead pipe, 4.50c.; zinc, 4.50c.; pewter, No. 1, 30c.; tinfoil, 35c., and block tin, 45c.

St. Louis

DEC. 2.—Non-ferrous metals have been going at a rather lower level, though transactions have been too light for the past week to determine what the figures would be in an active market. On carload lots we quote as follows: Lead, 7.75c., the Government price still being maintained; spelter, 8.05 to 8.10c. Less than car load lots are quoted: Lead, 8.25 to 8.50c.; spelter, 9.50c.; tin, 75c., nominal; copper, 27.50c.; Asiatic antimony, 10.50c. In the Joplin district zinc blende sold, for top grades in limited quantity, at \$75 per ton, basis of 60 per cent metal, while second grades, also in small quantity, went at the agreed basis price of \$55.67. Calamine was quiet at \$35 to \$45, basis of 40 per cent metal, with transactions light. Lead ore was steady, basis of 80 per cent metal, at the fixed price of \$100. The averages for the week for the district were: Zinc blende, \$61; calamine, \$39; lead, \$100. We quote dealers' buying prices, on miscellaneous scrap metals, as follows: Light brass, 9c.; heavy yellow brass, 12c.; heavy red brass and light copper, 15c.; heavy copper and copper wire, 17c.; pewter, 50c.; tinfoil, 55c.; lead, 5.50c.; tea lead, 4.50c.; zinc, 5c.; aluminum, 19c.

The Donner Steel Co., Inc., Buffalo, has called a special meeting of stockholders on Dec. 9 to vote on a proposition to increase the capital stock from \$11,000,000 (divided into 60,000 shares of preferred stock and 50,000 shares of common stock, par value of each \$100) to \$13,000,000, the increase to be covered by 20,000 shares of first preferred stock. It is also proposed to vote on a classification of the first preferred, second preferred and common stocks, to cover a cumulative 8 and 7 per cent return respectively on the preferred issues.

Prices Finished Iron and Steel, f.o.b. Pittsburgh

Freight rates from Pittsburgh on finished iron and steel products, including wrought iron and steel pipe, with revisions effective Nov. 1, 1918, in carloads, to points named, per 100 lb., are as follows: New York, 27c; Philadelphia, 24.5c; Boston, 30c; Buffalo, 17c; Cleveland, 17c; Cincinnati, 23c; Indianapolis, 25c; Chicago, 27c; St. Louis, 34c; Kansas City, 59c; St. Paul, 49½c; Denver, 99c; Omaha, 59c; minimum carload, 36,000 lb. to four last named points; New Orleans, 38.5c; Birmingham, 57.5c; Pacific Coast, \$1.25; minimum carload, 80,000 lb. To the Pacific Coast the rate on steel bars and structural steel is \$1.315, minimum carload 40,000 lb.; and \$1.25, minimum carload 50,000 lb. On wrought iron and steel pipe the rate from Pittsburgh to Kansas City is 50c. per 100 lb., minimum carload 46,000 lb.; to Omaha, 50c., minimum carload 46,000 lb.; to St. Paul and Minneapolis, 49.5c., minimum carload 46,000 lb.; Denver, 99c., minimum carload 46,000 lb. A 3 per cent transportation tax applies. On iron and steel items not noted above, rates vary somewhat and are given in detail in the regular railroad tariffs.

Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 3 to 6 in. on one or both legs, ½ in. thick and over, and zees, structural sizes, 3c.

Wire Products

Wire nails, \$3.50 base per keg; galvanized, 1 in. and longer, including large-head barb roofing nails taking an advance over this price of \$2, and shorter than 1 in., \$2.50. Bright barbed wire, \$3.35 per 100 lb.; annealed fence wire, Nos. 6 to 9, \$3.25; galvanized wire, \$3.95; galvanized barb wire and fence staples, \$4.35; painted barbed wire, \$3.65; polished fence staples, \$3.65; cement-coated nails, \$3.40 base; these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 47 per cent off list for carload lots, 46 per cent for 1000-rod lots, and 45 per cent off for small lots, f.o.b. Pittsburgh.

Bolts, Nuts and Rivets

Large structural and ship rivets, \$4.40 base
Large boiler rivets, \$4.50
7 16 in. x 6 in. smaller and shorter rivets, 50-10 per cent off list
Machine bolts h.d. nuts, ¾ in. x 4 in.:
Smaller and shorter, rolled threads, 50-10-5 per cent off list
Cut threads, 50-5 per cent off list
Larger and longer sizes, 40-10 per cent off list
Machine bolts, c.p.c. and t. nuts, ¾ in. x 4 in.:
Smaller and shorter, 40-10 per cent off list
Larger and longer, 35-5 per cent off list
Carriage bolts, ¾ x 6 in.:
Smaller and shorter, rolled threads, 50-5 per cent off list
Cut threads, 40-10-5 per cent off list
Larger and longer sizes, 40 per cent off list
Log bolts, 50-10 per cent off list
Flow bolts, Nos. 1, 2, 3, 50 per cent off list
Hot pressed nuts, sq., blank, 2.50c. per lb. off list
Hot pressed nuts, hex., blank, 2.30c. per lb. off list
Hot pressed nuts, sq., tapped, 2.30c. per lb. off list
Hot pressed nuts, hex., tapped, 2.10c. per lb. off list
C.p.c. and t. sq. and hex. nuts, blank, 2.25c. per lb. off list
C.p.c. and t. sq. and hex. nuts, tapped, 2.00c. per lb. off list
Semi-finished hex. nuts:
¾ in. and larger, 60-10-10 per cent off list
9 16 in. and smaller, 70-5 per cent off list
Square bolts, 70-10 per cent off list
Square bolts, 2½ per cent extra for bulk
Tee bolts, 50-10-5 per cent off list
The above discounts are from present lists now in effect.
All prices carry standard extras.

Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, \$57; chain rods, \$65; screw, rivet and bolt rods and other rods of that character, \$65. Prices on high carbon rods are irregular. They range from \$70 to \$80, depending on carbons.

Railroad Spikes and Track Bolts

Railroad spikes 9 16 in. x 4½ in. and heavier per 100 lb., \$3.50 in lots of 200 kegs of 200 lb. each or more; track bolts \$4.90. Boat spikes, \$5.25 per 100 lb., f.o.b. Pittsburgh.

Terne Plate

Effective May 21 prices on all sizes of terne plates are as follows: 8-lb. coating, 200 lb., \$15 per package; 8-lb. coating, 1 C. \$15.30; 12-lb. coating, 1 C. \$17.00; 15-lb. coating, 1 C. \$18.00; 20-lb. coating, 1 C. \$19.60; 25-lb. coating, 1 C. \$22.00; 30-lb. coating, 1 C. \$24.00; 35-lb. coating, 1 C. \$26.00; 40-lb. coating, 1 C. \$28.00 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

Iron and Steel Bars

Steel bars at 2.90c. from mill. Refined iron bars, 5.00c.; common iron bars, 3.50c. in carload and larger lots, f.o.b. mill.

Wrought Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing card, as announced Nov. 5 by the Government on steel pipe, those on iron pipe being the same as quoted for some time:

Steel			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
¾, 1 and 1½	44	17½	¾ and 1	23	+4
1½	48	33½	1½	24	+3
2 to 3	51	37½	2	28	10
			3 to 1½	33	17
Lap Weld			Lap Weld		
2	44	31½	1½	18	3
2½ to 6	47	34½	1½	25	11
7 to 12	44	30½	2	26	12
13 and 14	34½		2½ to 6	28	15
15	32		7 to 12	25	12
Butt Weld, extra strong, plain ends			Butt Weld, extra strong, plain ends		
¾, 1 and 1½	40	22½	¾, 1 and 1½	22	5
1½	45	32½	1½	27	14
2 to 1½	49	36½	2 to 1½	33	18
2 to 3	50	37½			
Lap Weld, extra strong, plain ends			Lap Weld, extra strong, plain ends		
2	42	30½	1½	19	4
2½ to 4	45	33½	1½	25	11
4½ to 6	44	32	2	27	14
7 to 8	40	26½	2½ to 4	29	17
9 to 12	35	21½	4½ to 6	28	16
			7 to 8	20	8
			9 to 12	15	3

To the large jobbing trade an additional 5 per cent is allowed over the above discounts, which are subject to the usual variations in weight of 5 per cent. Prices for less than carloads are four (4) points lower basing (higher price) than the above discounts on black and 5½ points on galvanized.

On butt and lap weld sizes of black iron pipe, discounts for less than carload lots to jobbers are seven (7) points lower (higher price) than carload lots, and on butt and lap weld galvanized iron pipe are nine (9) points lower (higher price).

Boiler Tubes

The following are the prices for carload lots, f.o.b. Pittsburgh, announced Nov. 13, as agreed upon by manufacturers and the Government:

Lap Welded Steel		Charcoal Iron	
3½ to 4½ in.	34	3½ to 4½ in.	12½
2½ to 3½ in.	21	3 to 3½ in.	+ 3
2½ in.	17½	2½ to 3 in.	+ 7½
1½ to 2 in.	13	2 to 2½ in.	+ 22½
		1½ to 1¾ in.	+ 35
Standard Commercial Seamless—Cold Drawn or Hot Rolled			
Per Net Ton		Per Net Ton	
1 in.	\$340	1½ in.	\$220
1½ in.	280	2 to 2½ in.	190
1¾ in.	270	2½ to 3 in.	180
2 in.	220	3 to 3½ in.	200
		4½ to 5 in.	220

These prices do not apply to special specifications for locomotive tubes nor to special specifications for tubes for the Navy Department, which will be subject to special negotiation.

Sheets

Makers' price for mill shipments on sheets of United States standard gage in carload and larger lots are as follows:

Blue Annealed—Bessemer		Cents per lb.	
No. 8 and heavier		4.20	
Nos. 9 and 10		4.25	
Nos. 11 and 12		4.30	
Nos. 13 and 14		4.35	
Nos. 15 and 16		4.45	
Box Annealed, One Pass Cold Rolled—Bessemer			
Nos. 17 to 21		4.80	
Nos. 22 and 24		4.85	
Nos. 25 and 26		4.90	
No. 27		4.95	
No. 28		5.00	
No. 29		5.10	
No. 30		5.20	
Galvanized Black Sheet Gage—Bessemer			
Nos. 10 and 11		5.25	
Nos. 12 and 14		5.25	
Nos. 15 and 16		5.30	
Nos. 17 to 21		5.35	
Nos. 22 and 24		5.40	
Nos. 25 and 26		5.45	
No. 27		5.50	
No. 28		5.55	
No. 29		5.60	
No. 30		5.65	
Tin-Mill Black Plate—Bessemer			
Nos. 15 and 16		4.80	
Nos. 17 to 21		4.85	
Nos. 22 to 24		4.90	
Nos. 25 and 27		4.95	
No. 28		5.00	
No. 29		5.05	
No. 30		5.10	
Nos. 30½ and 31		5.10	

BRITISH STEEL CONDITIONS

The British Metal Corporation—The National Federation of Iron and Steel Makers—
Huge Subsidies
(By Mail)

LONDON, ENGLAND, Nov. 12.—The war is over, and work has been to a great extent abandoned for a day or two, the streets being thronged with jubilant crowds and the buildings gay with bunting. We stand now on the threshold of reconstruction and all its problems, and until one can take new bearings, the course cannot be laid. That is the position to-day.

So far as markets movements are concerned, there are none. Conditions in pig iron are as stringent as ever and the pressure for deliveries is unabated, while the car position is no better, makers being only able to get iron away in dribbles irregularly. There is no doubt that consumers will be short of metal for some time to come, and furnace output is still deficient. Prices remain as before at 99s. for No. 1 and 95s. for No. 3 Cleveland, No. 4 foundry and No. 4 forge, with export rates 127s. 9d. for No. 1 to the Allies and 122s. 9d. for the other grades. Hematite is firm at 122s. 6d. for East Coast to the home trade and 147s. 6d. for the Allies. Insistent pressure is reported for all kinds of manufactured material, especially for shipyard work.

Substitutes for Tin Plate

The war has led to very few new ideas in the tin-plate industry, though the shortage of material has forced users to adopt various substitutes. In this respect, however, necessity has not been the mother of many efficient inventions. Cardboard, though specially prepared, has not proved a really satisfactory container for liquid substances, and cut up tins have for the most part failed to yield a sufficiently clean and flat plate to be of much use to consumers. I hear, however, of a process by which almost any old tins of good sizes are being cut up, flattened, cleaned, and reconditioned through pots in such a manner and with such satisfactory results that the final product could be termed a good waster plate. The Ministry of Munitions has had the matter explained to them, and were surprised at the quality of the plate turned out by this special process. A syndicate is now making these plates, and as much as £100 per ton has been paid for their product. How the business will fare after the war remains to be seen, but on the information at present available it will be a very long time before the tin-plate makers will be freed from restrictions.

The recursory particulars have now been filed regarding the British Metal Corporation. The British Government will be represented on the board of directors by the appointment there of a Treasury nominee, and it will probably be found that the Australian Commonwealth will hold similar representation. Very stringent conditions are laid down for the purpose of excluding enemy interest and influence, and the issuing of bearer shares is forbidden. Not less than three-fourths of the directors must be at all times resident in the United Kingdom.

National Federation of Steel Makers

There is much stir in connection with the formation of the National Federation of Iron and Steel Manufacturers. Ostensibly the organization is for the purpose of collecting trade statistics and generally looking after the interests of its members as regards legislation and so forth, but it is believed that something different from this is aimed at though not disclosed. Already the Iron, Steel and Allied Trades Federation does all the statistical work necessary, and there is no apparent need for another organization to cover the same ground. The names associated with the new movement suggest a wider significance altogether: Scoby Smith of Bolvokow's and Sir W. B. Peat, the accountant, both of whom are known well in connection with association movements.

Post-war prospects are very disturbing to the Welsh steel and finishing industries, which have been very hard by the control arrangements, and a meeting of those interested has been held at which resolutions were passed, copies of which were sent to the government. The Welsh steelmakers depend for their outlet upon the local tin-plate and galvanized sheet trades, and these have been knocked completely out of the export markets by America. It is suggested that government subsidies on raw material must be continued after the war if existing active works are to continue in operation, and if the idle 50 per cent is to be put into commission again. Failing this, Wales will cease to be a factor in the tin-plate and galvanized sheet markets abroad. It is also urged that proper provision be made for an adequate supply of tin and spelter for the works. An urgent need, too, is the return to industry of the tens of thousands of men drawn haphazard from the country's vital industries.

Subsidies to Steel Makers

In reply to questions in Parliament, it was stated that up to July £47,000,000 had been paid to iron and steel manufacturers alone in subsidies since the war began, and that since then the subsidies had been increased. "Appetite comes by eating," say our French allies, and they are right—but the economic prospect becomes deplorable if recent policy is to be pursued.

Extras on Packing Wire for Export

The following statement has been issued by E. H. Gary, chairman Committee on Steel and Steel Products of the American Iron and Steel Institute:

New York, Dec. 5, 1918.

Referring to previous announcements, the committee now makes the following recommendation in respect of an extra on wire, said recommendation to be effective on and after Nov. 20, 1918:

Wire

Add the following at the end of the section on wire on page 100 of the institute pamphlet of Nov. 15, 1918:

"Where specifications in regard to packing wire for export shipment call for more than three wire ties or bands and a binder or locking wire, an extra charge of \$1 per net ton may be made, this charge being applicable whether the coils are to be shipped plain, burlapped or papered. Where the specifications require paper or burlapping, a reasonable charge may be made for same in addition to the extra of \$1 per net ton referred to above. These extras for export packing to be effective on and after Nov. 20, 1918."

Large Manganese Ore Imports in September

The September importations of manganese ore were the largest for any month this year, having been 72,685 gross tons. The previous largest receipts for the year were 58,036 tons in April. The total imports to Oct. 1, 1918, have been 382,382 tons, or 42,487 tons per month. The monthly average in 1917 was 52,498 tons or the largest for any year.

The American Museum of Safety, 18 West Twenty-fourth Street, New York, has been granted permission to change its name to the Safety Institute of America. The officers for the coming year are Arthur Williams, president; James Speyer, treasurer; Dr. William J. Moran, secretary. The vice-presidents are E. H. Gary, Mrs. E. H. Harriman, Dr. William H. Nichols, Charles E. Hughes and B. B. Thayer.

The Westerman Iron Works, Seattle, Wash., announces the change of its name to Bacon & Matheson Forge Co. The personnel of the stockholders, trustees and officers of the corporation remains unchanged. Cecil H. Bacon is president; W. Scott Matheson, vice-president, and A. J. Carmody, secretary.

A Minneapolis, Minn., dispatch says that the shell plant of the Minneapolis Steel & Machinery Co. was destroyed by fire Dec. 1 with a loss estimated at several hundred thousand dollars.

Machinery Markets and News of the Works

ADJUSTMENT BLOCKED

Comptroller Rules Payments to End War Work Illegal

War Department Program Held Up by Decision—Few New Cancellations—Actual Machine-Tool Business Small

The virtual end of cancellations has been reached; and through all the overturn of industry the machine-tool trade has held to sane and rational views in the face of the lack of constructive or co-operative assistance from Washington except the most general statements issued to the press.

The announcement of a war contract adjustment program Dec. 1 by Assistant Secretary of War Crowell, which is the first detailed statement as to contemplated procedure in such cases, is expected to afford some basis for clearing up the situation. The work is to be in charge of District Adjustment Boards at centers of production, such as Boston, Bridgeport, New York, Rochester, Philadelphia, Pittsburgh, Cleveland, Chicago, Detroit, St. Louis, and elsewhere, and will include the district ordnance chief, the regional advisor of the War Industries Board, a legal advisor, a cost accountant, and a technical production man. Much of the machinery of adjustment is now held up, however, by

the decision of the Comptroller of the Treasury Department that supplementary contracts for the payment of an arbitrary sum in adjustment of cancellation may be illegal; and it is possible that legislation will be necessary to remedy matters.

Dealers and manufacturers meanwhile are settling down seriously to meet the needs of industry on its new status. Both actual inquiry and orders are of comparatively small compass. The automobile manufacturing field shows initial activity, the White Co., Cleveland, being in the market for 25 machines. The railroads are now regarded as other likely purchasers of equipment, and their 1919 budgets are reported to provide for considerable outlays for the mechanical departments. A bright spot in last week's transactions was the order to resume work on orders aggregating over \$200,000 worth of tools for the Holt Co., Peoria, Ill. The underlying cause here, however, was as much the need of the Army for tractors as any desire to ease the situation with the tool builders.

Predictions of a flood of second-hand tools have failed to materialize. A rather cheering aspect is lent to present market trends by the auction of the equipment of the Smith Motor Truck Co. at Chicago, which brought prices equal to those obtained a month ago.

Labor forces released by the large munition plants are being easily absorbed by other shops. No labor troubles are reported; but some uncertainty is expressed by students of the situation in New England as to the attitude of labor.

New York

NEW YORK, Dec. 3.

The first stage of cancellation has now been accomplished, and for the machine-tool trade as a whole the legal phases and monetary settlements have been turned over to officials to close up. Dealers and agents are actively canvassing the situation in order to reach as accurate an estimate as possible as to the business to be had in the next few months of readjustment. Opinions vary somewhat. The belief is general that after a period of changing over to peace footing the machine-tool industry will enjoy a run of business somewhat better than the normal market of pre-war days. This view is based on an analysis that war pressure created among other things a considerable number of new plants compelled by Government requirements to turn out work to close dimensions at a rapid pace, and the survival of many of these is expected to set a new high-speed operating standard to which older plants running more or less according to somewhat slower rates must work up to in order to reach equally low production costs. While it is recognized by such critics that these plants are only one sizable factor in the metalworking industry, it is asserted that to just that extent this speeding-up of the other shops makes for re-equipment too. More and more the prediction grows among close students of market conditions that a great quantity of tools under the drive of war work have virtually been used up by the sustained pressure of war work, largely by reckless operation in night shifts.

Standard machines of sturdy construction or suitable for rebuilding at a moderate cost are, however, expected to be a substantial factor in the market as second-hand tools for some time to come. Used machinery business has not yet shown any marked expansion.

The week's business amounts to almost nothing. Large machinery houses sum up quite a number of single tool inquiries, but agents representing single lines can count sales on the most part on the fingers of one hand. Railroad

budgets for 1919 are reported to contain liberal provisions for the mechanical departments, and the hope that they will fill the gap in the machinery markets is reviving with all its old-time vigor.

The United States Shipping Board Emergency Fleet Corporation, Philadelphia, is establishing a Bureau of Supplies, which it is understood is to have charge of buying and selling matters in connection with the shipbuilding program. It is reported that millions of dollars' worth of equipment from canceled shipyard contracts and machinery orders subjected to the stop-work edicts following the armistice will be disposed of under its auspices. Mr. Evans is in charge of the bureau.

The Navy Department is in the market for 21 cranes for the Mare Island Navy Yard; for 1 15-ton and 1 35-ton crane for the Portsmouth Navy Yard; for 2 15-ton cranes for the light machinery and electrical shop and 2 15-ton 90½-ft. span cranes for the structural shop at the Brooklyn Navy Yard. No awards of the recent bids asked for various cranes by the Pennsylvania Railroad have been made. The inquiry of the Philadelphia & Reading Railroad for 1 25-ton crane for its Reading locomotive shops may be revised to call for 2 200-ton cranes with 2 100-ton trolleys each. Its schedule for this plant also includes 1 10-ton and 1 35-ton crane.

The Staten Island Shipbuilding Co., 1 Broadway, New York, has awarded contract to Fred T. Ley & Co., 19 West Forty-fourth Street, for a two-story machine shop, 50 x 150 ft., at its Mariners Harbor shipbuilding plant, Richmond Terrace, Staten Island, to cost \$40,000.

The Dew Valve Co., Inc., New York, has been incorporated with a capital of \$50,000 by M. H. Cooley, 317 West 119th Street A. L. Wright, 123 Parkside Avenue, New York, and T. F. Peterson, 226 East Third Street, Brooklyn, to manufacture steam valves, etc.

The United Aircraft Engineering Co., New York, has been incorporated with a capital of \$100,000 by P. O. Zimmerman, F. G. Giffin and A. Jones, 55 Liberty Street, to manufacture aeroplanes, etc.

The Cooling Tower Co., 17 John Street, New York, has increased its capital from \$20,000 to \$50,000.

The Standard Concrete Steel Co., 105 West Fortieth Street, New York, has had plans prepared for a one-story and basement machine shop, 110 x 225 ft., on Fifty-first Street near Amsterdam Avenue, to cost \$100,000.

The Chelsea Ship Repair Co., New York, has been incorporated with a capital of \$20,000 by E. M. Tassey, C. Cooper and F. W. Wetjen, 2425 Valentine Avenue.

The Navy Department, Washington, is arranging for an appropriation of \$2,500,000 for the purchase of land and the construction of additional shops and other structures at the Brooklyn Navy Yard.

The Save Electric Corporation, New York, has been incorporated with a capital of \$200,000 by M. L. Newman, M. Ettinger and B. P. Price, 680 West End Avenue, to manufacture electrical specialties.

The Garvin Machine Co., 139 Varick Street, New York, will occupy the new shop building at 275-77 Spring Street, now being planned by the Trinity Church Corporation, 187 Fulton Street, as a forge shop and steel hardening works.

Machinery at the plant of the American Star Cork Co., 175 North Ninth Street, Brooklyn, was damaged by fire on Nov. 24.

The Neptune Hardware Mfg. Co., 54 South Street, New York, has leased property at 33 Warren Street for a new establishment.

Erac, Inc., New York, has been incorporated with a capital of \$30,000 by R. C. Cumming, N. G. Webster and J. Rowan, 244 Riverside Drive, to manufacture rail devices.

S. Karpen & Brothers, 68 Thirty-fourth Street, Brooklyn, will soon take bids for their proposed six-story and basement furniture and woodworking plant on Jackson Avenue, near Hulst Avenue, Long Island City, to cost \$725,000.

The General Electric Co., Schenectady, N. Y., is building a three-story addition to its building No. 20, 35 x 75 ft., to cost \$35,000.

Herman Ellis, Inc., Perth Amboy, N. J., has been incorporated with a capital of \$100,000 by Herman Ellis, Jacob Rudeman and H. K. Colonbock, Perth Amboy, to operate a metal works.

The Raritan River Railroad, South Amboy, N. J., will build a one-story engine house, machine shop and boiler plant at its local yards, William A. Tilton, Keyport, will be in charge.

The Standard Underground Cable Co., 26 Washington Street, Perth Amboy, N. J., will build a one-story copper tube works addition, 60 x 130 ft.

The E. I. duPont de Nemours Co., Wilmington, Del., is planning to close down a large part of its powder works at Haskell, N. J., releasing about 3000 persons, of whom many will be employed at its other plants.

The New Jersey Graphite Co., operating in Jefferson Township, near Morristown, N. J., has acquired 46 and 50-acre tracts for extensions in operations.

The International High Speed Steel Co., Rockaway, N. J., is now employing over 100 men at its works.

Construction has been commenced of a number of large buildings to form the new works of Henry Ford, Detroit, Mich., at Green Island, opposite Troy, N. Y. The site covers about 300 acres, and it is understood that the plant will be equipped for the manufacture of barges.

The Arrow Machine Co., 5434 Boulevard, West Hoboken, N. J., has filed notice of organization to manufacture machinery. Oscar C. Boos heads the company.

In connection with a total bond issue of \$3,985,000 for municipal extensions, the City Commission, Jersey City, has made appropriations of over \$200,000 for the construction of a power plant for the Lincoln school for new boilers and auxiliary equipment at the Coles Street bathhouse and for a new boiler at the City Hospital.

The Public Appliance Co., 505 Summit Avenue, Jersey City, N. J., has filed notice of organization to manufacture gas appliances. George A. Humphrey, Sea Gate, N. Y., heads the company.

The Board of City Commissioners, New Brunswick, N. J., has completed plans for a new boiler house at Weston's Mill Pond for the municipal waterworks.

The Factory Supplies & Hardware Co., Newark, N. J., has been incorporated with a capital of \$50,000 by F. X. Bauer, R. A. Necbit and J. M. Cooney to manufacture hardware and plumbers' supplies.

Leonard Lorentovitz, Newark, N. J., has had plans pre-

pared for a one-story welding and machine shop, 45 x 70 ft., at 292 Halsey Street.

The Triangle Tool & Machine Mfg. Co., Newark, N. J., has filed notice of organization to operate a works at 680 South Eleventh Street. William G. Ziegler, 90 Pennsylvania Avenue, and Herman W. David, 377 Bergen Street, head the company.

The M. V. Engineering Co., 56 Summer Avenue, Newark, N. J., has filed notice of organization to manufacture electrical specialties. Alfred Minnich, 382 Summer Avenue and Earl Hinman, 46 Park Street, head the company.

The Empire Mfg. Co., Binghamton, N. Y., is being incorporated and is erecting a factory building on Alice and Griswold streets on a site 100 x 200 ft., at a cost of \$50,000. It plans to manufacture a combination muffler and cutout for automobiles. Saul W. Botnick is president and Jules M. Livingston general sales director and advertising manager. The company is operating a temporary plant on Leno Street. Machinery and raw materials have already been purchased.

Victor Veyrant, 5 Rue Sebastian-Gryphe, Lyons, France, is open to propositions for representing American manufacturers of machinery and allied products. He advises that the city of Lille, now having been set free, he is beginning the reorganization of his business, formerly carried on there at 151 Rue de Paris.

New England

BOSTON, Dec. 2

Among machine tool manufacturers it was pointed out that where the average life of a machine of this class had with normal use been, say, some 10 years, the war pressure of nearly continuous and crushing operation has cut the period in all probability to but three or four years. For a plant to get back onto a peace footing of efficiency meant therefore a renovation of tool equipment, and this naturally leads to an optimistic view of the future. Uncertainty as to the labor attitude renders many others less hopeful. Shorter days and a cutting out of night work are not uncommon. Some plants, as the New Departure Mfg. Co., Bristol, Conn., have hired men. The Waterbury plan of reducing labor turnover is viewed favorably in other cities, like Springfield, Mass., and has even won the good will of labor men who at first regarded it as a blacklisting scheme. Certain manufacturers of machine tools, steel plant equipment, etc., are considering business trips abroad early in the year to look into the prospects on the ground for American products in Europe.

A \$7,500 lumber mill is under erection at Brookline, N. H., by the B. & A. D. Fessenden Co.

The Chandler Oil Cloth Co. will erect a factory at Tanton, Mass.

Work has begun on a \$3,500 one-story, 50 x 40 ft., to a factory at Quincy, Mass., of the William Hall Co.

The Boston & Maine Railroad Co., Boston, has contracted for a \$250,000 engine house, one story, 100 ft. long, at East Deerfield, Mass.

The Maine Central Railroad Co., Portland, Me., has begun work on rebuilding the pattern shop, two stories, 60 x 140 ft., and will also erect new buildings, two stories, 70 x 150 ft., and one story, 20 x 40 ft., for the same purpose at Waterville, Me.

The construction of the \$400,000 aeroplane station at Boston has been shelved by the Government for the present.

Work is going forward on the machine shop and foundry at the Charlestown, Mass., Navy Yard. The building is 20 x 256 ft. and involves \$900,000.

A proposed four-story, 36 x 48 ft., factory addition for the American Radio & Research Corporation, Tufts College, Medford, Mass., is held in abeyance.

The Granite State Coal Co. will erect a \$2,000 conveyor at Manchester, N. H.

Bids have been received for a five-story, 75 x 170 ft. reinforced concrete factory for Lever Brothers, Cambridge, Mass.

A start has been made on a three-story, 35 x 95 ft. casket factory at Bangor, Me., for the A. B. Haskell Co., Brewster, Me., but the superstructure is not planned for erection this winter.

A machine shop extension, one story, 60 x 250 ft., will be of brick for the General Ordnance Co., Derby, Conn.

Figures are being received by the Navy Department, Bureau of Yards and Docks, Washington, on the rebuilding of a carpenter shop, \$9,000, at Newport, R. I., \$130,000 addition to foundry at Portsmouth, N. H., and a \$135,000 addition to the machine shop there.

The Taft Pierce Mfg. Co. is erecting a factory addition, four stories, 125 x 135 ft. at Woonsocket, R. I.

An extension, one story, 48 x 118 ft., is under way to the foundry of the Pratt & Whitney Co., Hartford, Conn.

The Magnus Metal Co., New Haven, Conn., will build a foundry extension, one story, 16 x 94 ft.

Buffalo

BUFFALO, Dec. 2.

The Donner Steel Co., Buffalo, has prepared plans for a strip-iron storage building, 60 x 120 ft., at its plant on the Buffalo River and the Lackawanna Railroad.

P. J. Nies, architect of the Lackawanna Railroad Co., Hoboken, N. J., is preparing plans for a car house, 135 x 650 ft., one story, to be erected at its East Buffalo shops.

The Oswego Tool Co., Oswego, N. Y., has had plans drawn for a factory and storage building to be erected on West First Street.

The F. L. Hughes Co., 190 South Avenue, Rochester, is drawing plans for three factory buildings, 50 x 180 ft., 70 x 150 ft. and 30 x 60 ft., which it will erect on Lyell Avenue at a cost of \$50,000.

The Curtiss Aeroplane & Motor Co., Buffalo, has announced plans for its local plants, following cancellation of Government contracts. The Bradley Street and South Elmwood Avenue plants will be consolidated at the Churchill Street works, the Elmwood plant having heretofore engaged in the manufacture of metal parts and the Bradley plant used for the construction of wood sections. The Niagara Street plant of the company will be closed down while the Austin Street works have now also been discontinued. At the North Elmwood plant it is planned to complete 60 flying boats, F5 type, a new model, for the Government. James E. Kepperly is general manager.

The Hydraulic Power Co., Niagara Falls, N. Y., has made application to the Public Service Commission for permission to issue bonds for \$2,000,000 for extensions and improvements.

The Simpson-Walther Lens Co., Inc., Rochester, N. Y., has been incorporated with a capital of \$125,000 to manufacture engineering instruments, etc. J. N. Rauber, G. W. Simpson and G. V. Kondolf, Rochester, are the incorporators.

The Ratiometer Corporation, Rochester, N. Y., has been incorporated with a capital of \$25,000 by L. P. Willse, L. Labelard and W. K. Smith to manufacture motors, boilers, etc.

The Kaman Auto Radiator Co., Rochester, N. Y., has been incorporated with a capital of \$10,000 by E. A. Brown, T. Hacknall and C. C. Crawford, to manufacture radiators, etc.

Philadelphia

PHILADELPHIA, Dec. 2.

The Tioga Steel & Iron Co., Fifty-second Street and Gray's Avenue, Philadelphia, has purchased 4½ acres adjoining to provide for expansion.

The Lewis & Roth Co., Broad and Chestnut streets, Philadelphia, manufacturer of electric equipment, has increased its capital from \$50,000 to \$223,000.

The Midvale Steel & Ordnance Co., Widener Building, Philadelphia, is building a one-story forge shop addition, 175 x 280 ft., to cost \$50,000.

The G. & H. Barnett Co., 1076 Frankford Avenue, Philadelphia, has filed plans for a one-story addition, 20 x 35 ft., to its file manufacturing plant.

The Philadelphia Electric Co., Philadelphia, has authorized a stock issue of \$4,997,550, the proceeds to be used for extensions and betterments. It is proposed to install a new 20,000-kw. generator at the Chester, Pa., plant of the Beacon Light Co. and to make extensive additions in its distributing system. J. B. McCall is president.

The Emergency Fleet Corporation, Philadelphia, is considering the acquisition of the Hog Island Shipyard as a Federal project and is understood to have commenced preliminary proceedings for the purchase of the land from the American International Corporation, valued at \$1,760,000. The yard has been constructed by this corporation as agent for the Government and represents an investment estimated at \$60,000,000, including ways, piers, machine shops, riveting shops and other construction buildings. The land, owned by the corporation, has been used by the Government under lease. The yard has contracts on hand for 180 vessels, for the most part of cargo carrier and transport type, and has sufficient work ahead to insure operations at full capacity throughout the coming year.

The Westinghouse Lamp Co., Trenton, N. J., is planning to increase production at its local plant.

The Lucinda Coal Co., Lucinda, Pa., is planning for a new power plant.

The Electric Water Sterilizer & Ozone Co., Scottdale, Pa., manufacturer of sterilizer equipment, has increased its capital from \$250,000 to \$350,000.

Fire, Nov. 29, destroyed the plant of the Cressona Wagon Works, Pottsville, Pa., operated by William Selfert, including machine shop, blacksmith and wheelwright and automobile departments. The loss is estimated at \$50,000.

The Pennsylvania Salt Co., Natrona, Pa., will install a new ash-handling plant at its power station.

It is announced that the Government loading plant at Tullytown, Pa., will continue operations and that there will be no change in the plans for this works, which include increased production over the present capacity. It is expected to add to the present force of employees. The plant is operated by the Du Pont Powder Co. and is now being completed by the Foundation Co., New York, contractor.

The Modern Utilities Co., Harrisburg, Pa., has made application for a charter of incorporation to manufacture tools, valves, gages, etc. Howard M. Bingham represents the company.

Fire Nov. 25 in the industrial engineering section of the Pennsylvania State College, State College, Pa., destroyed that department of the institution, including power and lighting plant, with loss estimated at \$300,000.

The Philadelphia Steel & Iron Co., Thirty-third Street and Gray's Ferry Road, Philadelphia, manufacturer of forgings, has taken out a permit to build a one-story shop addition, 40 x 90 ft.

Baltimore

BALTIMORE, Dec. 2.

The Union Shipbuilding Co., Fairfield, Md., will soon commence the erection of an angle and plate shop addition, with department to provide for extensions to the bending and furnace shop. The present buildings are 80 x 250 ft. and 80 x 120 ft., and the new structure will be equipped to provide considerably increased capacity. The company is building new ways and buildings to allow for building 14 steel vessels at one time. The new shipways will be 400 ft. long and 65 ft. wide, with new cranes connecting the shops and yards. The cranes to be installed will be operated under cover. It is expected to increase the working force to 3000 men. The works are to specialize in the construction of 3500-ton steel schooners. The company is controlled by the McClintic-Marshall Co., Pittsburgh.

The Dundalk Co., St. Helena, Md., is having plans prepared for a pumping plant to cost \$25,000. Norton, Bird & Whitman, Munsey Building, Baltimore, are engineers.

The Magneto & Machine Co., 1034 Cathedral Street, Baltimore, is planning a new one-story machine shop.

The Crown Cork & Seal Co., Guilford Avenue, Baltimore, with branch works at Highlandtown, is planning to place its plants on a normal operating basis, and general inventory is now being taken to arrange details. The company has been manufacturing tripods for Browning machine guns. It is understood that the new Highlandtown plant of the company, designed for the manufacture of cartridges, will not be placed in operation at the present time. John M. Hood is president.

The Maryland Bolt Co., Continental Building, Baltimore, has acquired the property of the Mount Vernon-Woodberry Mills, Mount Washington, Md., including mill buildings and site, for the establishment of a new works. Plans are now being prepared for general improvements to the structures and for the installation of machinery for the manufacture of bolts, nuts, rivets, forgings and kindred specialties. The company recently changed its name to the Maryland Bolt & Forge Co. R. C. Hoffman, Jr., is president and Malcolm Grant superintendent.

The A. J. Reach Co., Tulip and Palmer streets, Philadelphia, will build a one-story boiler plant at its works at Elkton, Md.

The Hancock Foundry Co., Inc., Hancock, Md., recently incorporated with a capital of \$25,000, has acquired an existing foundry and plans to enlarge and improve it for the production of iron and brass castings. Roy M. Daniels and Raymond L. Henderson head the company.

The Navy Department, Washington, is planning the installation of electric traveling cranes at its works at Bellevue, D. C., to cost about \$30,000.

The Ordnance Department, Washington, is taking bids for the construction of a new machine shop and heat treatment works, forge shop and open-hearth steel works at Charleston, W. Va. The structures will be of steel frame construction, requiring about 17,000 tons of structural shapes.

The Union Iron Works, Norfolk, Va., has been incorporated with a capital of \$10,000 to manufacture iron and steel products. W. L. Lewis has been elected president; R. H. Gray, secretary.

Fire Nov. 25 caused considerable damage at the machine shop of W. W. McLaughlin, Whitehall Street, Atlanta, Ga., specializing in automobile repair work.

The Union Iron Works, Norfolk, Va., has been incorporated with \$10,000 capital stock. R. H. Gray is secretary.

The Tidewater Machine Works, Norfolk, Va., has been incorporated with \$20,000 capital stock. William M. Barrett is president and B. M. Herbert secretary.

J. C. Steele & Sons, Statesville, N. C., is seeking prices on engines and boilers.

The Island Creek Coal Co., Holden, W. Va., plans to install two 400-hp. boilers.

The Whitney W. Jones Machine Corporation, Inc., Baltimore, has increased its capital stock from \$5,000 to \$20,000.

Chicago

CHICAGO, Dec. 2.

Sentiment in the trade is much better, in fact it is cheerful with some, because of orders directing the continuance of work on machine tools. One of these, mentioned elsewhere in this issue, means the resumption of work on over \$200,000 worth of tools for the Holt Co., Peoria, Ill. Several smaller orders have been reinstated also. Meanwhile there is some new business, although only a little; the buyers are taking high-grade machines only. Builders' representatives, some with augmented sales forces, are laying plans to work harder than ever to obtain business. To just what extent the general market will be affected by second-hand offerings is not yet clearly defined, although it is conceded that of some types of tools quite a few will appear.

The Broline & Nolan Co., 8 South Dearborn Street, Chicago, has the contract for erecting two one-story extensions, 60 x 93 ft., and 30 x 80 ft., in Twelfth Street, near Fifty-fourth Avenue, Cicero, Ill., for the La Salle Steel Co., 2243 South La Salle Street, Chicago, at a cost of \$16,000.

The one-story factory which is to be built at 2823 Fulton Street, Chicago, for the Chicago Gear & Mfg. Co. will cost about \$40,000.

Bids have been taken on a two-story and basement extension, 125 x 213.8 ft., to the factory of the O'Malley Beare Valve Co., East Ninety-fifth Street and Prairie Avenue, Chicago.

L. B. Palmer-Ball, machinery specialties, 80 East Jackson Boulevard, has purchased factory property in Clybourn Avenue, near Diversey Parkway, Chicago, where, it is stated, improvements to cost in the neighborhood of \$95,000 will be made to centralize the business in this plant.

It is reported that the Atlas Motor Truck Co. has secured a plant in Creston, Iowa, and will build a 4-wheel drive truck which has been under test for some time. J. N. Livingston, Creston, is president of the company.

The Schreiber & Conchar Mfg. Co., Dubuque, Iowa, has changed its name to the Loetscher-Ryan Mfg. Co. and removed to Davenport, Iowa. It was organized to manufacture hardware specialties and machinery and do a general foundry machine-shop business.

Gustav Lidseen, machinery specialist, 224 North Desplaines Street, Chicago, has purchased a two-story brick structure at South Central Avenue and Lexington Street, Chicago, from the Makutchan Roller Bearing Co. About \$15,000 will be expended for alterations.

Because of reports that the Government will abandon Camp Grant, Rockford, Ill., as a military training camp, the citizens of Rockford are considering the utilization of the site as an industrial suburb. It is estimated that it has facilities for 100 manufacturing enterprises and includes a sewage system which was installed by the Government.

The Siems & Shepley Co., railroad contractor, contemplates building a car repair plant at St. Paul, Minn., next spring if negotiations with the Government are successful. It is said the plant will be located on a 21-acre site and cost \$1,000,000.

The Hill Pump & Valve Co., Archer Avenue, Chicago, has filed plans for the erection of a one-story addition to cost about \$4,500.

Mason Davis & Co., 7700 South Chicago Avenue, Chicago, have taken out a building permit to erect a new foundry to cost about \$10,000.

The Chicago Bridge & Iron Co., Chicago, is understood to be negotiating with the city council, Fort Erie, Ont., for a site for the establishment of a shipbuilding plant at the foot of Forsyth Street on the Niagara River. The company has contracts with the United States Shipping Board for the construction of a number of coal barges.

The Ludlow Typograph Co., Clybourn Avenue, Chicago, has filed plans for the construction of a new one-story plant, 50 x 135 ft., on Clybourn Avenue, to cost about \$20,000.

Pittsburgh

PITTSBURGH, Dec. 2.

The Pittsburgh machine-tool trade is marking time. There is practically no new business except some purchases being made by the Pennsylvania Railroad. Some sellers are not soliciting any business, as they feel that under present conditions it would be an annoyance to manufacturers who are engrossed in other readjustment problems. Distributors of tools are expecting a rather quiet business for at least 60 days.

No second-hand machinery has come into the market as the result of suspension of war work. An official of the Westinghouse Electric & Mfg. Co., Pittsburgh, which has discontinued work on British shells, states that there will be no general scrapping of Westinghouse plants or machinery. The tools which the Westinghouse company has been using for war work will be largely suitable for peace-time production, except of course such tools as have been worn out by hard usage.

The Westinghouse Electric & Mfg. Co., Pittsburgh, discontinued production of shells at two of its plants in Pittsburgh last week upon receipt of cancellations from the British Government. About 4000 men were thrown out of employment, but a large number of these had done work in other lines previous to the war and in most instances were readily taken back by former employers. Quite a number were transferred to other Westinghouse shops.

The Electric Appliance Co., Pittsburgh, manufacturer of electrical specialties, has increased its capital from \$25,000 to \$40,000.

In addition to the 30,000-kw. generating unit now being installed at the plant of the West Penn Power Co., Pittsburgh, at Windsor, W. Va., it is planned to install another generator of like capacity, with necessary auxiliary equipment, early next year.

The Glass Casket Co., Central Trust Building, Pittsburgh, is planning for the early occupancy of its new plant at Altoona, now in course of erection. It will consist of seven buildings, estimated to cost \$500,000 with equipment.

The Hydraulic Drawn Forging Co., Pittsburgh, has increased its capital from \$5,000 to \$50,000.

The American Railway Equipment Co., Pittsburgh, has been incorporated with a capital of \$25,000 to manufacture railroad apparatus and machinery. George W. Minges is treasurer.

Fire Nov. 26 destroyed a portion of the Crescent works of the Crucible Steel Co. of America, Pittsburgh, with loss estimated at \$75,000, divided into \$50,000 in machinery and equipment and \$25,000 building damage.

The Wheeling Electric Co., Wheeling, W. Va., subsidiary of the American Gas & Electric Co., 30 Church Street, New York, is considering the construction of a new steam-operated electric power plant at Windsor, W. Va., to cost over \$1,000,000.

The Ben Franklin Coal Co., Moundsville, W. Va., is planning the construction of a coal tippie at its local properties. A mechanical conveyor system for coal handling will also be installed. It plans to develop the property to a maximum of 5000 tons daily capacity. D. T. Burton, Marshall County Bank Building, is the engineer in charge.

Milwaukee

MILWAUKEE, Dec. 2.

The machine-tool business is quiet. A few orders are being received, of a widely scattered nature and consist of one or two machines apparently required to piece out shop equipment and for replacement. Most of the business booked the past week came from gas engine manufacturers and the automobile, tractor and motor truck industries. Manufacturers as a rule are under the impression that new business will be quiet for two to three months, during which conditions in the metal-working industry will gradually be readjusted. After that, a generous distribution of orders is looked for.

The volume of business ordered held in abeyance or unconditionally canceled is not large; in fact, the loss of orders due to the close of the war is less than makers had anticipated. The volume of business on books is sufficient to keep shops busy at a reasonable capacity for three to four months and working schedules or forces have not been reduced. Skilled men are still being absorbed as rapidly as they become available.

Structural shops in Milwaukee report that the past week has developed a large number of small requirements which furnish a good aggregate. A number of steel construction problems of considerable size are developing. The outlook for fabricators and erectors is regarded as satisfactory and encouraging.

Among Government contracts placed with local metal-working shops the past week or 10 days are the following: Press Steel Tank Co., steel barrels, \$161,500; Milwaukee Re-Roller Boiler Works, 14 pairs boiler feed tanks; Milwaukee Tank Co., copper tanks; National Enameling & Stamping Co., 1000 enameled sheet metal dust covers; Geuder, Paeschke & Frey Co., 100 oil cans; Milwaukee Flush Valve Co., compression valves; Cutler-Hammer Mfg. Co., rheostats; Earth Mfg. Co., lifting jacks, \$6710; F. Rosenberg Elevator Co., elevators, \$3050; National Enameling & Stamping Co., coffee boilers, \$25,200; Wisconsin Iron & Wire Works, woven wire; Chain Belt Co., general conveyors; Bucyrus Co., three contracts for locomotive cranes; Kearney & Trecker Co., milling machines; Claus Automatic Gas Cock Co., brass work, \$6430; Allen Bradley Co., controllers, \$7720; Cutler-Hammer Mfg. Co., crane magnets; Illinois Steel Co., rails.

The Northern Corrugating Co., Green Bay, Wis., the incorporation of which was recently noted, has taken over the plant and business of the Fox River Cornice & Corrugating Co., Green Bay, Wis., and the Louisville Heating & Supply Co., Louisville, Ky., which have been financially related for several years. It is intended to erect a new plant in Milwaukee or build an addition to the Green Bay works the coming year, but definite plans have not been made. The new corporation has a capital stock of \$200,000. The officers are: President, H. W. Krueger, Green Bay; vice-president and general manager, P. Frank Flagg, Milwaukee; secretary, A. M. Smith, Milwaukee; treasurer, A. C. Krueger, Green Bay. Mr. Flagg formerly was general superintendent of the Milwaukee Corrugating Co., Milwaukee and Kansas City, Mo., and will be in general charge of operations and production.

The Progressive Metal & Refining Co., 432 Barclay Street, Milwaukee, sustained an estimated loss of \$25,000 by fire Nov. 28. Repairs were undertaken immediately and the greater part of the plant was ready to resume operations today.

The Universal Motor Co., Oshkosh, Wis., manufacturer of direct-connected generating systems, has increased its capital stock from \$50,000 to \$100,000. The company has been executing large Government contracts.

The Prest-O-Lite Co., 619 Trowbridge Avenue, Milwaukee, will take bids after Dec. 5 for the erection of a brick and concrete compressor building, 60 x 100 ft., to replace the structure destroyed by an explosion on Nov. 21. The building and equipment will cost about \$15,000.

The Sanitary Dish Washing Machine Co., Milwaukee, has been incorporated with a capital stock of \$99,000 to manufacture special machinery. The incorporators are John Vaudreuil, Ernest Seeger and Alfred C. Loose. Temporary offices have been opened at 607 Merrill Building, Milwaukee.

The Whitney Brothers Shipbuilding Co., Superior, Wis., has acquired acreage adjoining its present holdings to provide two additional ways, giving a capacity of six boats at one time. Four ships are now under construction and the first launching will take place Dec. 15.

The Aluminum Goods Mfg. Co., Manitowoc, Wis., has purchased several lots adjoining its branch factory at Two Rivers, Wis., to provide for future extensions, although no immediate construction is contemplated. George Vits is president and general manager.

The Universal Concrete Mold Co., 707 Merrill Building, Milwaukee, contemplates erecting a new plant at North Milwaukee next spring. The main shop will be 110 x 180 ft., and the assembling and shipping building, 50 x 100 ft., both of reinforced concrete and steel, with steel sash and sawtooth roof. The estimated cost with equipment is \$45,000. A. S. Green is secretary.

The Anchor Shipbuilding Co., Washburn, Wis., has engaged R. H. Brunner, consulting engineer, Duluth, Minn., to prepare plans for its proposed new steel shipyards on Chequamegon Bay, the initial unit to comprise four ways. John L. Larsen, formerly connected with the Superior Shipbuilding Co., is assistant to the president and chief purchasing agent. Waldemar Nicolaysen, formerly of Duluth, is president and general manager. The company has a capital stock of \$100,000.

The Perfection Metal Co., Milwaukee, has been organized with a capital stock of \$99,000 to manufacture and refine metals and metal products. The incorporators are George E. Meredith, 103 Lincoln Avenue; Adolph Justman and Charles J. Holesovsky.

The Evnrude Motor Co., 279-291 Walker Street, Milwaukee, which a year ago acquired a five-acre factory site at Thirtieth and Hopkins streets, North Milwaukee, has made

no definite plans for the construction of its proposed new plant, which was held in abeyance during the period of the war. John F. Koch, treasurer, states that no action will be taken for perhaps five or six months. The company manufactures rowboat motors and has been devoting much of its capacity to the production of hand grenades and other war work.

The Globe Shipbuilding Co., Superior, Wis., is having plans made for a new steam generating plant to cost about \$25,000.

The Holt Hardwood Co., Oconto, Wis., has awarded contracts for the erection of a brick and mill addition which will be used to accommodate the equipment of the Williams Brothers Co., Cadillac, Mich., recently acquired. Some new power and wood-working machinery will be installed for the manufacture of tool and broom handles, shoe lasts and other hardwood specialties.

Cleveland

CLEVELAND, Dec. 2.

The general trade is still awaiting the announcement of a definite policy on the cancellation of machine tools. A few dealers, however, have decided to accept cancellations of their standard machines. One large New England machine tool builder, which for two years has inserted a clause in its contracts providing for a cancellation charge of 25 per cent, is advising those who wish to cancel that if they insist on the immediate definite disposal of the matter the cancellation charge will be made according to the terms of the contract. The company further states that if the matter can be left in abeyance until its cancellations are all in and its work and order book checked up, it may be able to make some reduction in this 25 per cent cancellation charge.

Machine-tool builders report that some new business is coming out every day, but largely in single machines. The new demand is fairly well scattered, but most of it is directly or indirectly from the automobile field. Manufacturers look for a fair volume of business from this source, as it is believed that many of the larger companies will need additional machinery to balance up their equipment and get their plants in shape for the large production of passenger cars which they are planning for the coming year. The Hudson Motor Car Co., Detroit, which was equipping its plant to machine 6-in. shells, has quickly turned its attention to its regular production, and the past week purchased some machinery for making motor cars. The White Co., Cleveland, will install additional equipment for the manufacture of its commercial trucks and is in the market for about 25 machines. Some inquiry is coming out for single machines for early shipment, but many manufacturers evidently have not had sufficient time to get their bearings and as yet are unable to accept these orders for early delivery. No additional cancellations are reported.

The Cleveland National Machine Co., West Seventieth Street, Cleveland, has increased its capital stock from \$50,000 to \$300,000 with a view of increasing its manufacturing facilities. It is stated that considerable new equipment will be added. The company plans to build an extension a little later.

The S-F-K Steel Barrel Co., 7900 Jones Road, S. E., Cleveland, will build an addition to its plant at a cost of \$40,000. An adjoining site, 100 x 200 ft., has been purchased.

The Augmore Mfg. Co., East Fifty-third Street and Sweeney Avenue, Cleveland, has purchased the property of the H. Frankel Steel Range Co., on the Erie Railroad at Harvey Avenue, including six acres and factory buildings with 75,000 sq. ft. of floor space, which it will equip to provide additional facilities for manufacturing domestic water heaters. It is understood that the Frankel company will secure quarters elsewhere.

The Wellman-Seaver-Morgan Co., Cleveland, has placed contracts for the erection of a four-story concrete factory office building, 66 x 28 ft., to be built in connection with its Akron, Ohio, works.

The Meyer Rubber Co., Cleveland, has purchased the plant of the Columbiana Mfg. Co., Columbiana, Ohio, and will convert it into a factory for the manufacture of pneumatic tires.

The Leece-Neville Co., 5353 Hamilton Avenue, Cleveland, maker of automobile lighting and starting equipment, has taken over the manufacture and sale of the Wright Industrial electric trucks and tractors, formerly made by the Wright-Hibbard Co., Buffalo, N. Y., and will provide facilities for increasing the output.

The American Steel & Machinery Co., Mansfield, Ohio, has purchased a site adjoining its plant with a view of making future extensions.

Cincinnati

CINCINNATI, Dec. 2.

Machine tool makers and other manufacturers are marking time. War work has been slowed down as much as possible and work on special machines has been cut off entirely. Up to the present time there has been no serious interruption of business and no problem of unemployment has developed. Whether or not this will become a serious factor depends upon the cancellation of contracts by the Government. It is generally believed that the authorities in Washington will use discretion in the canceling contracts and that some of them may be extended over a probable period of six months to give time for readjustment without causing any unnecessary releasing of skilled labor. Quite a number of employees have been laid off lately, but some of these have been absorbed in other lines. Besides, many workers in war industries were there to perform a patriotic duty and now welcome a release. This applies especially to female employees in plants at Dayton, Ohio.

Since machine-tool builders have now had time to get their breath a more optimistic sentiment is general. While there are very few inquiries for machines, cancellations have become less frequent. Requests for cancellation of stock orders are universally refused, but the present uncertainty is causing the machine tool dealer proportionately as much anxiety as it is to the builder.

Automobile manufacturers have not yet put out any lists, and from present indications they will wait until after the end of the year before making known their wants in the machinery line.

The Burton Machine & Engineering Co., Cincinnati, is installing machinery in its plant on Spring Grove Avenue to be used for the manufacture of machine tools. The new plant will be ready for work some time in January. Practically all equipment has been purchased.

The Aquatic Products Co., Lockland, Ohio, a Cincinnati suburb, has been incorporated with \$100,000 capital stock by Louis J. Hoppe and others. The company has acquired a plant at Lockland for the manufacture of artificial leather and waterproof paper. Practically all the additional equipment required has been provided for.

The Carroll-Jamieson Machine Tool Co., Batavia, Ohio, has completed the addition to its plant and is installing the necessary equipment for the manufacture of lathes.

It is reported that the Dayton Pump & Mfg. Co., Dayton, Ohio, is preparing to resume the manufacture of pumps. It has heretofore been engaged largely in war work.

The new plant of the London Fabric Mill Co., London, Ohio, is under roof and the installation of machinery will be completed by Jan. 1.

It is reported from Columbus, Ohio, that the signing of the armistice will not stop the progress of railroad improvements in that city. The program includes the new Pennsylvania Railway shops and enlargements of the Hocking Valley Railroad's shop and roundhouse.

Hooton & Son, Greenfield, Ind., are inquiring in this market for a set of 6-ft. bending rolls to handle 3/16-in. plate, also a hand-power shear and punch.

St. Louis

ST. LOUIS, Dec. 2.

The Oklahoma Portland Cement Co., Ada, Okla., will proceed at once with the construction of an additional unit to increase its capacity from 2500 bbl to 5000 bbl. per day and requires additional machinery.

The Altenburg Light & Power Co., Altenburg, Mo., will rebuild its electric plant recently destroyed by fire. About \$10,000 worth of machinery is needed.

The Town Council, Slater, Mo., will spend \$25,000 for additional electric light and power plant equipment.

The President Machine Works, Oklahoma City, Okla., has acquired additional space which it will equip to increase its manufacturing capacity.

The Leach-Nobles Ice Co., Marks, Miss., is in the market for about \$15,000 worth of ice making machinery.

The city of New Orleans, La., J. D. O'Reilly chief engineer of the Dock Board in charge, will install a mechanical coal-handling plant in connection with its new dock system.

I. M. Putnam and others interested in the Ardmore Street Railway Co., Ardmore, Okla., have plans for the building and equipment of an interurban electric railroad with power plant, etc., from Ardmore to Oklahoma City, Duncan and Sherman or Denison, Tex.

The Machinery Exchange Co., New Orleans, La., is in the market for two or more turbine driven generators, 1000 to 1500-kw.

The L. D. Murrelle Lumber Co., Memphis, Tenn., will rebuild its sawmill recently burned with a loss of \$10,000.

The Doullut & Williams Co., New Orleans, La., will carry out its contracts with the Emergency Fleet Corporation for the construction of 8 all-steel vessels, each about 1000 tons capacity. The keel for the first boat has been laid. The plant has facilities for building four boats at one time and is now giving employment to about 600 men.

The Inland Machine Works, Locust Street, St. Louis, is having plans prepared for the construction of a new plant to cost about \$200,000, and will call for bids early in the year. The structure will be equipped for the manufacture of piston rings, dies, etc. John Flammang is president.

The American Car & Foundry Co., St. Louis, is arranging for the immediate resumption of work on the construction of 3500 freight cars for export. The company is now giving employment to about 10,000 persons at its three local plants.

Detroit

DETROIT, Dec. 2.

Due to the predominance of the automobile and accessory industry in this State, reports are coming in that readjustments are taking place rapidly and as a result machine-tool dealers are anticipating an immediate resumption of brisk business.

The Ford Eagle plant in Detroit will complete 100 submarine destroyers for the Government. This forms the original contract.

The Malleable Iron Co., Saginaw, is doubling the capacity of its plant. It is working on a large rush order for the British Government, which will be completed despite the ending of war activities.

The Saginaw Shipbuilding Co., Saginaw, will continue in full operation, having sufficient contracts to keep it busy for more than a year. The company is employing more than 1500 men and work is being rushed on the ships under construction.

The Standard Motor Truck Co., Detroit, recently broke ground for a building, 65 x 175 ft., south of plant No. 1. Construction of a second unit of the same size will be started as soon as this addition is completed. These extensions are necessitated by the rapidly increasing business. A. Fisher is president.

The Smith Carburetor Co., Detroit, has let contracts for a two-story addition to its factory on Hart Avenue.

Texas

AUSTIN, Nov. 30.

Industrial conditions are beginning to show a marked revival. Many new manufacturing projects which have been held in abeyance on account of the war will be carried to fulfillment in the near future. The demand for oil well machinery and supplies exceeds all previous records. Improvements to public service plants are also on the program.

The Ranger Refining Co., Ranger, is preparing for the construction of an oil refinery two miles west of the city, which will have a daily capacity of 1000 bbl. of crude oil. It will be built on the unit plan, so that additions may be made as the growth of business may justify. F. Elmer Scott, Kansas City, Mo., is a stockholder.

The American Can Co., Fort Worth, which has a capital stock of \$93,000,000, has purchased a site upon which it will build a manufacturing plant.

The Bay City Utilities Co., Bay City, has been incorporated for the purpose of installing waterworks and electric light plants. It has a capital of \$40,000. H. W. Caldwell is a stockholder.

The Dallas Everlasting Post Co., Dallas, has been incorporated to manufacture building materials. J. J. Carter is a stockholder.

The National Shipbuilding Co., Orange, will equip an electric power plant at its yards.

The Prairie Pipe Line Co., Independence, Kan., has awarded contract for dredging a deep-water channel as an outlet for its terminal on Pelican Island, Galveston, where it will equip a large oil pumping station.

The Emergency Fleet Corporation has canceled contracts with the Beaumont Shipbuilding & Dry Dock Co., Beaumont, for the construction of wooden vessels, previously ordered, upon which actual work has not been started. It is understood that other local shipbuilding companies have received similar instructions.

J. J. Kane, Galveston, is planning for the establishment of a new machine shop and boiler works.

The National Shipbuilding Co., Orange, is said to have closed negotiations for the lease of property on the water front at Galveston, owned by the Galveston Wharf Co., for the establishment of a shop for the installation of machinery and equipment in vessels constructed at the Orange yards. A. A. Daugherty is president.

E. E. Sands, city engineer, Houston, is preparing plans for extensions and improvements to the municipal waterworks to include the installation of new electrically operated pumping machinery, electric generators and other equipment.

California

LOS ANGELES, Nov. 25.

The Southern Pacific Railroad, Arcade Station, Los Angeles, has filed plans for the construction of a two-story brick addition to its shops at 1700 Alhambra Avenue, 60 x 60 ft., to cost \$12,000.

The Board of Trustees, Oceanside, Cal., is planning for the construction of a new electric power plant for its waterworks system, with pumping capacity of about 45,000 gals. per hr.

The Pittsburg Foundry Co., 4891 South Alameda Street, Los Angeles, has filed plans for a one-story addition to its foundry, 50 x 125 ft., to cost \$6,800.

The Los Angeles Shipbuilding & Dry Dock Co., Los Angeles, will soon commence the construction of a new dry dock to increase the present capacity for repair operations, at an estimated cost of \$1,000,000. It will be built in co-operation with the Government.

The California Iron Metal Co., Los Angeles, has been organized to operate works at 527 East Eighth Street. Meyer Zwick, 136 Rosemont Avenue, heads the company.

The directors of the Modesto and Turlock irrigation districts, Stockton, Cal., are planning for the construction of a new storage reservoir in connection with an electric power plant to be known as the Don Pedro Storage Reservoir. It is proposed to provide a water capacity of 260,000 acre ft., with hydroelectric power plant with initial capacity from 6000 to 10,000 hp.

The West End Consolidated Mining Co., Higgins Building, Los Angeles, is having plans prepared for the construction of a new machine shop, mill buildings and other structures at its properties at Searles Lake, Cal.

The Electrical Engineering & Battery Co., 939 South Grand Avenue, Los Angeles, has been organized to manufacture battery specialties. H. L. Field, 607 Sunset Boulevard, heads the company.

W. H. Jahns, Los Angeles, machinist, is having plans prepared for the construction of a machine shop at North Main and Elmira streets, to consist of two one-story buildings 80 x 110 ft. and 60 x 70 ft. A. C. Martin, Higgins Building, is architect.

The B. & C. Machinery Co., Hayward, Cal., has commenced the construction of a one-story addition to its plant, 100 x 200 ft.

The C. L. Best Gas Traction Co., Los Angeles, manufacturer of tractors, etc., has commenced the construction of an addition to its main works at Oakland.

The Ontario Power Co., Ontario, Cal., is planning for the early construction of a hydroelectric power plant in San Antonio Canyon, recently approved by the State Railroad Commission, estimated to cost about \$65,000.

E. P. Blair and Samuel Parilla, 2411 Elm Avenue, Long Beach, Cal., will build a new one-story machine shop, 20 x 25 ft., at 247 Fish Harbor Wharf, San Pedro Harbor, Los Angeles.

The Pacific Northwest

SEATTLE, Nov. 25.

Industries in this section are preparing to meet the readjustment period and a number of plants that had either been closed down or were operating on a restricted scale are making ready to enter the industrial field with renewed vigor.

The refusal of the Administration to allow Northwest shipbuilders to construct vessels for foreign interests is meeting with severe criticism. One large steel yard in Portland has been forced to refuse an offer to build 20 large steamers. While all the steel shipyards in this district have contracts well ahead, some assured of work during all of 1919 and 1920, the unsettled situation prevents them from taking advantage of considerable business offered for later construction, also in safeguard themselves through purchasing material and equipment.

While the canceling of all spruce production work has

temporarily disarranged conditions, lumbermen are of the opinion that they are about to enter upon the most prosperous era for some time past. The embargo on shipments of lumber East has brought about a serious depletion of stocks in retail yards, and with this embargo lifted, a large volume of business will come from this source. With the vast reconstruction demands in Europe, and the fact that tonnage for cargoes will be available, lumbermen are prepared to enter actively into this new trade.

The Stimson Mill Co., Seattle, plans the erection of a planing mill, 120 x 160 ft., to cost about \$15,000.

Within the next 60 days the entire equipment of the spruce production division in the Northwest, including timber, mills and logging railroads, will be advertised and sold to the highest bidder. Estimates on the value of the property place it at approximately \$10,000,000. Brigadier General Brice P. Disque, director of the Spruce Production Division, will be in charge. Included in the properties are between 70,000,000 and 80,000,000 ft. of cut timber and 12 standard gauge railroads.

The Ne Page McKenney Brass Foundry, Seattle, which was completely wrecked by a recent fire, will be rebuilt immediately. It was engaged in the manufacture of brass fittings for a local shipyard.

The Returned Soldiers' Co-operative Lumber Co., Ltd., Vancouver, B. C., is being organized by prominent British Columbia business men. It will have capital stock of \$10,000,000 and will operate eight large sawmills with an annual cutting capacity of 150,000,000 ft. of lumber. Sir Douglas Cameron and Thomas Meredith, Vancouver, are at the head of the project. Only returned soldiers will be employed.

The Everett Bed Mfg. Co., Everett, Wash., has purchased a building which will be equipped to manufacture steel beds. It will have capacity of 800 to 1000 beds per day.

The plant of the Beaver Foundry Co., St. Johns, Ore., was recently destroyed by fire with complete loss to the equipment.

The port of Astoria, Ore., is considering the establishment of a coaling plant at an expenditure of \$500,000.

The Colby Steel & Engineering Co., Portland, has bought the Auto-Marine Machine Works and the structural steel and fabricating business of the West Coast Steel Co., both of Tacoma, where it has opened a branch office. R. N. Allen, formerly with the Stone & Webster Co., and maintenance engineer for the port of Seattle, is vice-president of the Colby company and as supervising engineer has general charge of the shop and field work.

Canada

TORONTO, Dec. 2.

Building operations this winter will be on a larger scale than for several years. Construction work that has been projected for some time will be taken up, and pushed as soon as funds become more available. High money rates are proving one of the reasons for delaying operations. Among permits taken out in Toronto the last few months, are the following: Canadian Alis-Chalmers Co., Lansdowne Avenue and Davenport Road, addition to foundry, \$70,000; Liquid Air Co., Maria and Boler streets, addition to factory, \$18,000; Bawden Machinery Co., Sterling Road, addition to plant, \$25,000; National Iron Works, Cherry Street, addition to foundry, \$15,000; Turnbull Elevator Co., factory, Richmond Street West, \$20,000; International Business Machine Co., Royce and Campbell Avenues, addition to factory, \$40,000, and Universal Tool Steel Co., Dufferin Street, addition to factory, \$36,000; Wilson, Lytle, Badgerow & Co., addition to factory, \$22,000.

The Arnprior Cabinet Works, Arnprior, Ont., will build a brick addition to its factory to cost \$20,000.

The T. E. Bissell Co., Mill Street, Elora, Ont., will rebuild the main factory of its plant which was recently destroyed by fire with a loss of \$60,000. It is asking for prices on new machinery.

The United Iron Works & Machine Co., Haileybury, Ont., will build a foundry at a cost of \$75,000 as soon as a site has been secured.

The Armstrong Lumber Co., Port Arthur, Ont., will commence work at once on the erection of a mill at Lakefield, Ont., to cost about \$60,000.

The Dennis Wire & Iron Works Co., 22 Dundas Street, London, Ont., will erect a new building in connection with its plant.

The Republic Motor Truck Co., 115 Dupont Street, Toronto, Ont., is contemplating the erection of a factory for the manufacture of motor trucks, automobiles, etc.

The Canadian Ice Machine Co., Ltd., 82 Chestnut Street,

Toronto, Ont., is having plans prepared for the erection of a manufacturing plant to cost \$40,000.

The Pollard Mfg. Co., Ferguson Avenue, Niagara Falls, Ont., is preparing plans for the erection of a factory building to cost about \$70,000. Mr. Lobonband is manager.

P. Bain, 113 Fifth Avenue, New Westminster, B. C., is in the market for a 20 to 25-hp. stationary gasoline engine.

W. H. Banfield & Son, Ltd., 372 Pape Avenue, Toronto, is in the market for a motor generator, 25-cycle, 2 to 3-kw. capacity.

The Chatham Malleable & Steel Mfg. Co., Chatham, Ont., is in the market for an engine lathe, 8 or 10 ft. bed, with turret head and taper attachments.

The General Motors of Canada, Ltd., Walkerville, Ont., has been incorporated with a capital stock of \$1,000,000 by Alexander Leslie, John E. Laughlin, Hugh L. McDowell and others of Walkerville. The company has secured a site and will erect a plant for the manufacture of automobiles, trucks, tractors, farm machinery, implements, etc.

The Leaside Munitions Co., Ltd., Leaside, Ont., has been incorporated with a capital stock of \$10,000,000 by Emil A. Wallberg, president; Frederick J. Bell, electrical engineer, both of Toronto; Herbert M. Horsfall, manager, Leaside, and others. The company which has been manufacturing munitions has recently completed the erection of a new plant and is now installing machinery. It is also authorized to carry on business as metallurgists, machinists, brass and iron founders, etc.

The Standard Shipbuilding Co., Vancouver, B. C., has purchased the site of 9 3/4 acres from the Abernethy-Lougheed Co., Port Haney, B. C., where it will construct a plant. The company has closed contracts for 21 wooden vessels for the Portuguese, French and Italian governments. The contract represents a total value of \$16,250,000.

The Massey Harris Co., Ltd., 915 King Street West, Toronto, which recently acquired a new plant and 100 acres at Weston, Ont., is contemplating the erection of new buildings at an early date for the manufacture of gasoline tractors, farm implements, etc.

The Manitoba Steel Foundry Co., Mapleton, Man., will start work at an early date on the erection of a one-story power house to cost \$10,000.

The Starr Mfg. Co., Ltd., Dartmouth, N. S., is in the market for a machine for making railroad and ship spikes, either new or second hand.

The large shell forging plant of the British Forgings, Ltd., Ashbridges Bay, Toronto, was completely destroyed by fire Nov. 29. Several other buildings, including the shipping plant, power house and annealing buildings, were slightly damaged. The loss will amount to upward of \$250,000. The main plant south of the destroyed building was not damaged.

NEW TRADE PUBLICATIONS

Grinding Machinery.—Webster & Perks Tool Co., Springfield, Ohio. Booklet. Is a reprint of an article on the economical use of grinding wheels by W. T. Montague, presented at the Boston meeting of the metal division of the American Institute of Mining Engineers, which covers what wheels are to be used and how they should be operated to obtain the best results in casting work. A few side lights on safety devices are included.

Pneumatic Hammer.—H. Edsall Barr, Erie, Pa. Folder. Illustrates and describes a light power pneumatic hammer operating on air or steam which takes stock up to 2 in. thick and 3 in. wide. Its purpose is the elimination of most of the hand work in light tool dressing, forging, and blacksmithing, also the provision of a tool readily movable to the work and independent of mechanical operating means.

Flood Lighting.—National X-Ray Reflector Co., 235 West Jackson Boulevard, Chicago. Booklet. Explains at some length the important part flood lighting is playing in the winning of the war. Several new silver mirror reflectors for projectors and three new X-ray projectors are featured.

Pneumatic and Electric Tools.—Independent Pneumatic Tool Co., Chicago. Circular No. 28. Devoted to a line of pneumatic drills, hammers, rammers and grinders, also electric drills and grinders. Specifications and illustrations of the different standards are given.

Melting and Annealing Furnaces.—W. S. Rockwell Co., 50 Church Street, New York. Two bulletins. The first, No. 36, illustrates and describes a line of tilting reverberatory melting furnaces for non-ferrous metals, including

the company's latest development, a mechanically operated furnace with a capacity of 2000 lb. The other, No. 37, illustrates a type of furnace used for annealing copper wire and similar products without oxidation. Specifications and descriptions of the furnaces are given and views of installations are shown.

Foundry Buildings.—David Lupton's Sons Co., Welkel and Westmoreland streets, Philadelphia. Booklet. Treats of types of foundry buildings in various combinations with the company's steel sash, with many illustrations showing the distribution of light. Cross-section diagrams are given of standard type foundry buildings, illustrating the flow of air currents and escaping gases under different adverse air conditions. Typical installations are shown in elevation and cross-section with legends outlining the engineering features. Details of operating levers and other parts of the company's standard sash are brought out by photographs and diagrams. The development of foundry buildings in conjunction with the use of the company's steel sash, covering various large foundries in the Middle West, is described at some length.

Travel Recorders.—Service Recorder Co., Cleveland. Booklet. Points out the advantages of the recorder in providing data on the truck's running time, with the object of decreasing the idle time with consequent increased efficiency by providing a record of the delays, when they occur and their length. This is provided by the Service truck clock, consisting of a metal case inclosing a clock movement with a chart and marker.

Malleable Iron Wedges.—Sawyer Belt Hook Co., Pawtucket, R. I. Catalog. Illustrates a line of malleable iron wedges. Tables giving the gross weights supplement the engravings, there being practically no text in the catalog.

Milling Cutters, Reamers and Vises.—Cleveland Milling Machine Co., Cleveland. Lists lines of plain, side-face, spiral shell end, angular, double angle, spiral-cut end, straight end and other milling cutters, keyway twist drill and other cutters; metal slitting saws and gear cutters, as well as plane vises.

Rust-Proofing.—Parker Rust-Proof Co. of America, Detroit, Mich. Catalog, describing this company's process of rust-proofing and explaining the method of licensing, service department, equipment required, etc. Illustrations show a layout for a model processing room, racks, tanks and other equipment required and types of parts for which the process is used, including automobile parts, builders' hardware, rifle barrels, bayonets and various other parts.

Automatic Lathe.—Jones & Lamson Machine Co., Springfield, Vt. Catalog. Shows the various operations that can be performed by the Fay automatic lathe, which is designed for turning work held on centers or on centered arbors. An extended description of the construction of the lathe is presented, the text being supplemented by numerous illustrations of the different parts and diagrams of various operations. A number of views of the machine in use are included.

Marine Auxiliaries.—Griscom-Russell Co., 90 West Street, New York. Catalog. Size, 7 1/4 x 10 1/2 in.; pages, 124. Treats of a line of marine auxiliaries which includes evaporators, distillers, feed water heaters, oil coolers and heaters, grease extractors, aerating filters, etc. Illustrations and descriptions of the various appliances are presented and in a number of cases views of the vessels upon which they are installed are presented. A complete alphabetical index of the lines covered is included.

Coal Burner.—Mechanicsville Specialty Supply Mfg. Co., Mechanicsville, N. Y. Booklet. Illustrates a burner by which the small waste sizes of anthracite coal, coke breeze and all grades of bituminous coal can be utilized as fuel. A description of the device, which consists of filler plates covering the entire firebox area arranged so that the air is distributed through the fuel to insure perfect combustion, is presented.

Coal and Ash Gates.—Beaumont Mfg. Co., Philadelphia. Catalog. Illustrates and describes a line of standard gates for handling coal, ashes and coke and capable of adaptation for any dry flowing material. The features to be embodied in an efficient gate are briefly touched upon, followed by illustrations and instructions for operating the various forms of gates. In practically every case the instructions are supplemented by drawings to illustrate the points brought out in the text. A number of views of the gates in use are included.

Oil Engine.—St. Marys Oil Engine Co., St. Charles, Mo. Catalog. Outlines the principle of operation of a super-Diesel type of engine using heavy oil as fuel. In designing the engine the ignition system, carburetor, fuel pump and blow torch have been eliminated, thus doing away with practically all engine trouble. The construction of the engine is gone into at some length, the text being supplemented by illustrations of the different parts. The engine can be supplied in various sizes from 4 to 60 hp. and illustrations of the different types are presented together with tables of specifications and fuel consumption.

